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ENVIRONMENTAL ASSESSMENT BOARD

VOLUME: 294



DATE: Wednesday, February 20, 1991

BEFORE:

A. KOVEN Chairman

E. MARTEL Member

FOR HEARING UPDATES CALL (COLLECT CALLS ACCEPTED) (416) 963-1249

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HEARING ON THE PROPOSAL BY THE MINISTRY OF NATURAL
RESOURCES FOR A CLASS ENVIRONMENTAL ASSESSMENT FOR
TIMBER MANAGEMENT ON CROWN LANDS IN ONTARIO

IN THE MATTER of the Environmental
Assessment Act, R.S.O. 1980, c.140;

- and -

IN THE MATTER of the Class Environmental
Assessment for Timber Management on Crown
Lands in Ontario;

- and -

IN THE MATTER of a Notice by the Honourable
Jim Bradley, Minister of the Environment,
requiring the Environmental Assessment
Board to hold a hearing with respect to a
Class Environmental Assessment (No.
NR-AA-30) of an undertaking by the Ministry
of Natural Resources for the activity of
Timber Management on Crown Lands in
Ontario.


Hearing held at the offices of the Ontario
Highway Transport Board, Britannica Building,
151 Bloor Street West, 10th Floor, Toronto,
Ontario, on Wednesday, February 20th, 1991,
commencing at 9:00 a.m.

VOLUME 294

BEFORE:

MRS. ANNE KOVEN
MR. ELIE MARTEL

Chairman
Member



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I N D E X O F P R O C E E D I N G S

Witness:

Page No.

JAMES F. BENDELL,

JOHN MIDDLETON,

ROGER SUFFLING; Resumed

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Continued Cross-Examination by Mr. Hanna

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I N D E X O F E X H I B I T S

<u>Exhibit No.</u>	<u>Description</u>	<u>Page No.</u>
1735	Document entitled: Trappers and the Forestry Industry, The Case of Northwestern Ontario, Final Report, dated 1980 authored by Suffling, Dal Molin and Smith.	52486
1736	Overhead prepared by Dr. Suffling depicting ecosystem types and successional change.	52496
1737	Overhead of conceptual model of how landscape would vary over time re: Criteria No. 8 in Appendix 2.	52514
1738	One-page excerpt from third edition of text entitled: Fundamentals of Ecology, authored by Eugene P. Odum dated 1971.	52527
1739	Overhead prepared by Dr. Suffling depicting the effect of patch shape on the D statistic.	52549

1 ---Upon commencing at 9:10 a.m.

2 MADAM CHAIR: Good morning. Please be
3 seated.

4 Good morning, Mr. Hanna.

5 MR. HANNA: Good morning, Madam Chair,
6 Mr. Martel.

7 Good morning, Panel.

8 DR. MIDDLETON: Good morning.

9 JAMES F. BENDELL,
10 JOHN MIDDLETON,
ROGER SUFFLING; resumed

11 CONTINUED CROSS-EXAMINATION BY MR. HANNA:

12 Q. Panel, I was considering our
13 discussion and I thought it might be useful at the
14 outset to provide you with just a clear understanding
15 of where I'm coming from so that there's no
16 misunderstanding. When I say I, we're speaking on
17 behalf of the Ontario Federation of Anglers & Hunters.

18 I want you to understand that the OFAH
19 does not disagree with the need to maintain biological
20 diversity in the forest, that's the first principle.

21 The second thing is that we are of the
22 opinion that the featured species approach as proposed
23 by the Ministry is not adequate to maintain biological
24 diversity, so I want you to understand that that is
25 where I'm coming from, that it's not necessarily that I

1 disagree in terms of the concepts and principles that
2 this panel is bringing forward, the concerns that I
3 have with your proposal is operationally what it means.
4 I just want you to understand that's where the
5 questions will be coming from.

6 And I will be continuing my questions for
7 much of the day trying to explore what it means to
8 implement what, I would say, is the core of what you've
9 brought forward. And, that is, the suggestions that
10 you put forward, Dr. Middleton, on page 41 and Dr.
11 Suffling's included in Appendix 2, and that's going to
12 be -- because as I understand it, that is the operative
13 proposal you're bringing forward to implement what's
14 being proposed. That's fair; is it not?

15 DR. MIDDLETON: A. It is certainly the
16 central aspect of it, yes.

17 Q. Now, I'd like to know when the seven
18 criteria that we looked at yesterday were first
19 conceived.

20 DR. SUFFLING: A. By us?

21 Q. Yes. I presume they were conceived
22 by you.

23 A. Most of them are not new.

24 Q. All right.

25 DR. MIDDLETON: A. It's fair to say they

1 were collated by us into this form. I guess all three
2 of us can answer separately because they'll probably be
3 different.

4 In my case, they emerged in my
5 understanding during the process of the ESSA workshop.
6 Again, they didn't come as bolts from the blue, but
7 that is when they crystallized in my mind into a form
8 which could be written down in this sort of way.

9 Q. So that would be June, '90 type of --

10 A. From that period onwards, yes.

11 Q. Dr. Suffling?

12 DR. SUFFLING: A. Some of them were --

13 MADAM CHAIR: Excuse me, Dr. Middleton.

14 The criteria we're talking about, did they come from
15 specifically the ESSA workshop or they're your
16 creation?

17 DR. MIDDLETON: Again, I would make a
18 distinction between the approach which I think is
19 coming straight out of the ESSA workshop in a
20 co-operative way.

21 The second level that we're talking about
22 here is not, to my understanding, directly from the
23 ESSA workshop. It's our going beyond that to try to
24 give some more detail and it was the latter I was
25 talking about now.

1 MADAM CHAIR: Right.

2 MR. HANNA: Q. And, Dr. Suffling?

3 DR. SUFFLING: A. Can you repeat the
4 question, please?

5 Q. Yes. When did you first conceive of
6 the seven criterion in the form that they're currently
7 in?

8 I appreciate what you're saying that
9 these are not new concepts in terms of the landscape
10 ecology, I accept that. I'm talking about the concept
11 of taking those characteristics of the landscape and
12 defining them in terms of quantitative measures as you
13 have in your criteria?

14 A. Okay. Well, I'm sure you're aware
15 that many of these have a basis in the literature and
16 it goes back between, say, one and 30, 40 years and
17 some of them I've used for a while but then, as with
18 John Middleton, I think I really got thinking about
19 this in a detailed focused way at the ESSA workshop.

20 Q. And when did you first advise your
21 client that these types of measures were necessary in
22 terms of the maintenance of the landscape diversity?

23 DR. MIDDLETON: A. Can answer
24 separately, I think. My first contact with FFT was at
25 the ESSA workshop; that is to say, I was part of the

1 ESSA workshop before I had heard of this EA procedure
2 or of FFT in particular, so it's very difficult for me
3 to separate out one from the other.

4 Q. That's fine. So they were more or
5 less contemporaneous then. That's fine.

6 A. Yes.

7 Q. Dr. Suffling?

8 DR. SUFFLING: A. I was supposed to go
9 with FFT in late August I believe and by ...

10 Q. Late August of...?

11 A. Of last year.

12 Q. '90?

13 A. '90, yes. And by the end of November
14 of last year we had a draft which was essentially what
15 you see here. There have been some changes to it.

16 Q. So you made recommendations in the
17 latest draft terms and conditions that FFT have
18 submitted?

19 A. Yes, I believe they're reflected in
20 there.

21 Q. Now, are either of you familiar
22 with -- or perhaps, Dr. Bendell, I didn't mean to leave
23 you out.

24 DR. BENDELL: A. Fine.

25 Q. What's been your, I say, role in

1 terms of developing these seven criteria?

2 A. Simply making sure these are
3 compatible with biodiversity of wildlife particularly.

4 Q. And when did you advise FFT, or did
5 you advise FFT, that these types of criterion should be
6 included in their terms and conditions?

7 A. Well, from our time of association as
8 we've been developing our position.

9 Q. Which is...?

10 A. Well, when did we begin to talk this
11 way? I suppose from about a year ago perhaps we were
12 discussing aspects and principles.

13 Q. But these two gentlemen both told me
14 that they weren't affiliated with FFT a year ago.

15 A. Well, I suppose it comes down to the
16 specific affiliation. When did we begin to talk
17 together?

18 DR. MIDDLETON: A. I don't have the
19 dates at hand. I think the first time that you and I
20 spoke about this was just as I was coming out of the
21 first of the ESSA workshops and I understood that you
22 had been involved a little bit before that. I don't
23 have the dates at hand.

24 DR. BENDELL: A. I'm sure if you want a
25 chronology of our meetings and discussions -- it's

1 been, you know, a developing thing.

2 Q. No, I'm just trying to get a sense of
3 the -- then the reason that I'm asking these questions
4 will be obvious with the next question and, that is:
5 In the original terms and conditions that FFT put
6 forward they had proposed an indicator species approach
7 to dealing with biological diversity.

8 Were any of you people involved in
9 recommending an indicator species approach?

10 DR. SUFFLING: A. Perhaps I can answer
11 that for myself and not necessarily for the other two.

12 Q. Yes.

13 A. Dr. Bendell and I had discussed these
14 topics in a very, very general way at a conference in
15 May, but not specifically.

16 Q. May, 1990?

17 A. May, 1990, I'm sorry. And by the
18 time that we had our first meeting with Forests for
19 Tomorrow where we were all together, Forests for
20 Tomorrow was already pursuing the notion of the
21 landscape approach. And I think - I can't confirm
22 this, somebody from Forests for Tomorrow could do
23 this - I think that they had strengthened their resolve
24 and focused their resolve to do this as a result of the
25 ESSA workshop primarily.

1 Q. Okay.

2 A. That's just an opinion. You'd have
3 to confirm that.

4 Q. I'm not really interested in the
5 chronology and I'm sure Mr. Lindgren when the
6 opportunity is right will give the Board the chronology
7 if it's appropriate. That isn't my --

8 MR. LINDGREN: Madam Chair, I'm not even
9 sure this is even relevant to this Board's
10 consideration. We're now dealing with the November
11 28th, 1990 terms and conditions. Let's stick to the
12 landscape approach that FFT is advocating.

13 MR. HANNA: Madam Chair, I'll simply --
14 all I want to make sure is that in the minds of these
15 witnesses that an indicator species approach is
16 replaced by the landscape ecology approach and that we
17 aren't going to see that appear in some other form in
18 the process, and that's all I'm trying to establish
19 here.

20 MR. LINDGREN: Well, Madam Chair, that's
21 a question for FFT and FFT has put forward the
22 landscape approach and that is the approach that we
23 intend to pursue throughout this hearing to its final
24 conclusion.

25 MR. HANNA: I'm happy to hear that, Madam

1 Chair. I just want to make sure that these witnesses,
2 in terms of the evidence before the Board, concur that
3 an indicator species approach is passe with respect to
4 the landscape ecology approach -- or landscape
5 management approach.

6 Q. Is that a fair statement, witnesses?

7 DR. MIDDLETON: A. Well, to the extent
8 that the approach that we're advocating, of course, is
9 the two-level one which does not eliminate
10 consideration of some species for the reasons that are
11 spelled out in detail. If that's understood to be part
12 of the landscape approach that we're talking about,
13 then that is certainly the one that we're supporting.

14 MADAM CHAIR: You mean, Dr. Middleton, as
15 you said yesterday, and Dr. Suffling, that there may
16 still be room in the landscape approach for local
17 featured species in a management plan?

18 DR. MIDDLETON: Things of that sort. Not
19 just room for it, but that they will be an integral
20 part of it.

21 MR. HANNA: I'm sorry, Madam Chair, when
22 you asked that question, were you asking in terms of
23 whether there will be indicator species?

24 MADAM CHAIR: Yes, and our evidence is
25 that at the local level there will be room for featured

1 species in local level management.

2 MR. HANNA: Yes, I understood that. I
3 just want to make sure that there's - perhaps this will
4 be become clear when we present our evidence - but
5 there's a very clear distinction in my mind between
6 featured species and indicator species and what's
7 driving the two.

8 One is -- and perhaps just indulge me for
9 a moment. The indicator species is basically a way to
10 monitor the ecosystem health as opposed to providing a
11 direction for management; the featured species being:
12 I want to produce a certain product and, therefore, I
13 direct my management towards that. Where indicator
14 species is more a view of trying to monitor, like the
15 health of the system, and that's the difference that I
16 want to make sure that I understand with these
17 witnesses, that there's that difference.

18 Q. Is that consistent with your view of
19 featured species versus indicator species?

20 DR. BENDELL: A. I would agree with
21 that.

22 DR. SUFFLING: A. I would make that
23 distinction too.

24 Q. Okay. And so to simply put this to
25 bed, as far as we're talking in your evidence, the

1 landscape management approach with the specific
2 treatment of species requiring site-specific treatment
3 is the package you're bringing forward and the
4 indicator species approach as a concept is not
5 something that you're advocating? Your two-level
6 approach, that's what I was trying to summarize
7 succinctly as I could.

8 DR. MIDDLETON: A. Okay. I would just
9 clarify again that within the second level of the
10 approach it is not exclusively for those species which
11 need local features. There is also a place in it for
12 species of other groups that I mentioned such as rare,
13 threatened and endangered, also a place for monitoring
14 of various groups of organisms all of us -- as
15 described.

16 I guess my slight reluctance here is that
17 I am perhaps not sufficiently aware of the nuances of
18 the label indicator species and so on to say black and
19 white that there is none of it there.

20 DR. SUFFLING: A. Could I perhaps just
21 to expand on that very briefly. When we look at the
22 local level there is every opportunity to manage for
23 specific species, be they deer or woodpeckers or
24 turtles, whatever people are interested in, furbearers,
25 so that would be a featured species approach.

1 When it comes to indicator species, and
2 this is part of the - what shall we call it - the
3 technical toolbox of field biologists, there is room
4 for biologists obviously to use indicator species in
5 their studies to determine how well various kinds of
6 management are operating. And biologists have been
7 using indicator species for 50 or 70 years and I
8 presume that they will continue to do so as
9 appropriate, and that isn't really a -- that isn't a
10 policy matter, that's a research tool designed to
11 ferret out certain information that may confirm or deny
12 the wisdom of certain management policies.

13 Q. Dr. Suffling, one other initial
14 matter here and maybe we'll go back to some of the
15 issues we were talking about yesterday when we rose.
16 Your section is titled Ecosystem Supply Analysis;
17 correct?

18 A. Yes.

19 Q. Did you invent this term or is this
20 derived from the scientific literature somewhere?

21 A. I believe I invented it, but there's
22 always the chance, of course, that one has read
23 something months or years ago and the name sticks, but
24 the source doesn't.

25 Q. And when did you invent it?

1 A. Some time in September, I guess, when
2 we were discussing distinctions between habitat supply
3 analysis and some kind of a landscape approach.

4 Q. And you haven't published any papers
5 on this term?

6 A. No.

7 Q. Now, on page 50 of your witness
8 statement you indicate that there's a need for
9 conservation biologists to specify discrete and
10 concrete goals in terms of biodiversity.

11 That's the essence of -- the last
12 paragraph it carries over to page 51, but that's the
13 essence I think of what you're saying?

14 A. Okay. Yes.

15 Q. And is it fair to say that Appendix 2
16 is your attempt at bringing forward discrete, concrete
17 goals for biodiversity?

18 A. Yes, it's an agenda. I don't think
19 it's the final agenda.

20 Q. I'm sorry?

21 A. I don't believe that it's a final
22 agenda, in the sense that you have a bunch of measures
23 here, some of which are extremely well tested and been
24 refined and worked out over and there would be
25 limitations and so on and so on. Others are a little

1 more tentative.

2 Q. Well, I was going to go through each
3 one individually, but perhaps we should just do it now.

4 If you can just quickly tell me which
5 ones are tentative and which ones are -- we just turn
6 to Appendix 2 on page 64 and if you can just go No. 1
7 tentative, No. 1 well founded.

8 A. I don't think I would want to make a
9 black and white distinction like that.

10 Q. I'm just using your words.

11 A. I realize that.

12 Q. Do it any way you feel comfortable.

13 A. But that is like trying to classify
14 all books into two kinds.

15 Q. Use three kinds, use four kinds, I
16 don't mind. Tell me --

17 A. You know, but the Library of Congress
18 has hundreds of kinds.

19 Q. We only have seven criteria, so I
20 think that limits it.

21 A. I realize, yeah. I don't think there
22 would be much value in me trying to pigeon-hole into
23 two kinds.

24 Q. Well, perhaps we'll come back to it
25 then.

1 Now, Dr. Middleton, we left off yesterday
2 exploring how the seven landscape management criteria
3 would be administered practically in the timber
4 management planning process, and you recall that
5 discussion?

6 DR. MIDDLETON: A. Yes, I do.

7 Q. And, as I understand it, each of the
8 criteria -- the six criteria, would be tested in terms
9 of compliance at four levels being the province, the
10 ecoregion, ecodistrict, ecosection; correct?

11 A. I'm not sure that testing -- I should
12 remind you again that the proposals here are intended
13 as an approach in the beginning of things, I don't
14 think we're trying to -- I'm certainly not trying to
15 say that what we have is a well worked out
16 administrative implementation for these things.

17 The goal certainly is that this approach
18 will ensure that no species declines on a provincial
19 basis or on any smaller basis down to the lowest one
20 that you mentioned.

21 How that is implemented, what the
22 schedule for testing and for compliance monitoring and
23 so on are put into place, is not something that we've
24 claimed to have here in any detail at all. So, I
25 really can't answer that question.

1 MADAM CHAIR: Excuse me, Dr. Middleton,
2 did you say that no species will decline?

3 DR. MIDDLETON: Well, no --

4 MADAM CHAIR: You're talking about the
5 landscape.

6 DR. MIDDLETON: Well, the landscape is a
7 tool to the end of having no species decline, this is a
8 way --

9 MADAM CHAIR: But it doesn't measure
10 percentage species decline?

11 DR. MIDDLETON: It does not measure it
12 for each species; nevertheless, any evidence that
13 showed there was a significant long-term decline in
14 species - and here we get to the second level in the
15 strategy - any such evidence would be evidence that the
16 first step, the landscape approach, was not doing its
17 job properly and that some sort of adjustment will be
18 required.

19 So, although it's quite correct to say
20 that the approach, by the necessity of the task, does
21 not set out to collect the data on every single species
22 it, nevertheless, is still towards the implementation
23 of the goal that the Ministry and we have both put
24 forward that no species declines, long-term significant
25 decline. That's still our goal.

1 MADAM CHAIR: As a result of timber
2 management?

3 DR. MIDDLETON: As a result, quite so,
4 yes.

5 MADAM CHAIR: I'm going to ask you a
6 question and I don't want to raise -- the Board doesn't
7 introduce evidence at this hearing and in this question
8 what we're going to say has nothing to do with being
9 critical of MNR's policies, but Mr. Martel and I
10 noticed an article in the paper this morning and it
11 might not be accurate in the least, but it was
12 something to the effect that there would be a deer
13 cull. MNR would plan a deer cull because apparently
14 the size of the deer population is endangering rare
15 plants.

16 DR. MIDDLETON: This was in Rondeau Park
17 I believe. I read the same article.

18 MADAM CHAIR: Yes.

19 DR. MIDDLETON: Yes.

20 MADAM CHAIR: Now, that has nothing to do
21 with timber management planning, this has to do with
22 the deer and the plants, I assume.

23 Where would that kind of a situation fit
24 in with landscape management, and I'm asking this
25 because it's not clear in our mind where the people who

1 would be doing landscape management, the group who
2 would be organizing and doing this work would sit in
3 the MNR.

4 Do you see them being only on the timber
5 side or do you see such a group being overall in MNR
6 and would landscape planning have to do with that kind
7 of an issue that isn't timber management, but obviously
8 decisions are being made about biodiversity and
9 protection of species.

10 DR. MIDDLETON: Right. I think I
11 understand both parts of the question. There is a very
12 nice quotation in the ESSA report, which I'll look up
13 later without looking for it now, something to the
14 effect that this approach is obviously very germane to
15 integrated planning. It is of the sort that the
16 distinction between planning for this and planning for
17 that becomes blurred in theory.

18 Now, in practice of course there will, I
19 imagine, continue to be distinctions on roles and so on
20 within the Ministry, but the greater the degree of
21 integration that is possible in our view - certainly my
22 view - the better it is for all sides, for all sides in
23 the issue; that is to say, from the forest -- the
24 timber interests as well as wildlife interests and the
25 others.

1 If I can use the example that you gave to
2 try to explain how that might come about. I think the
3 example of the high deer population in Rondeau Park is
4 a good example of what happens when there is profound
5 change in a landscape. The issue here is that we have
6 very small remnants of the carolinian or southern
7 forest in these few parks.

8 The park, as I explained earlier, is far
9 too small, although it's a general size park, it's far
10 too small to have an ongoing ecological system within
11 its boundaries which is why the balance between
12 herbivores, the deer, and the natural vegetation is
13 very much out of wack. It cannot be managed as a unit
14 in itself and it certainly cannot be managed as
15 something where the natural balance would just
16 automatically take its place.

17 There are two ways out of this, in
18 theory: One of them would be if that park was
19 integrated into a much, much larger piece of land; that
20 is to say, Rondeau Park integrated into the whole
21 landscape of southwestern Ontario, and going back to
22 the iceberg analogy that would be making that
23 connection greater between that middle layer and the
24 great landscape layer below it.

25 Because of the realities of that part of

1 the world, intense human development, that is not
2 something which we can today do very much about and so
3 we were left with the less satisfactory, but probably
4 necessary one now of substituting more intense human
5 management within the boundaries of this subperfect,
6 sub-optimal park, in order, to try to act against the
7 imbalances as they come up.

8 Once it's to that stage I think it
9 becomes a question, you know, if you're going to -- if
10 you decided that a cull is going to go ahead, it
11 becomes a technical wildlife branch issue, I would
12 imagine to bring that about.

13 Our goal for this whole procedure is that
14 in the great expanses of northern Ontario we should, to
15 the greatest extent possible, avoid the situation
16 arising at all, which is why we talk about systems of
17 reserves and so on integrated with landscape planning,
18 precisely so these things don't come about at some
19 future time.

20 To the extent that we're able to prevent
21 this whole reconfiguration of the landscape bringing in
22 problems arising in the first place, hopefully the
23 distinction between wildlife planning and timber
24 planning would be -- would not arise, certainly not to
25 that extent.

1 DR. BENDELL: Can I speak to that
2 question, please?

3 MR. MARTEL: Yes, go ahead.

4 DR. BENDELL: I don't want to interrupt
5 your question.

6 MADAM CHAIR: Mr. Hanna, I'm sorry to
7 interrupt.

8 MR. HANNA: That's fine, Madam Chair.

9 MADAM CHAIR: But we were talking about
10 that issue and Mr. Martel and I are just confused about
11 where landscape planning fits into MNR's overall --

12 MR. HANNA: Current affairs are
13 something --

14 MADAM CHAIR: Dr. Bendell?

15 DR. BENDELL: Can I just say, well, what
16 you want to say is perfectly correct. I would
17 establish corridors so that the deer could disperse
18 from Rondeau and that, hopefully, would bring the
19 population down to a level that would be within the
20 bounds of the environment. If that weren't possible, I
21 would shoot them. Those are the alternatives.

22 And the problem is that perhaps under
23 original circumstances, as John is explaining, there
24 was this opportunity for excessive numbers to disperse
25 over the landscape and perhaps there are also

1 predators, bears, wolves, coyotes and so on that would
2 have maintained the deer numbers at a level that they
3 weren't so high as to damage where they live, their
4 habitat.

5 MADAM CHAIR: But this problem is a
6 problem of urbanization--

7 DR. BENDELL: That's right.

8 MADAM CHAIR: --as opposed to timber
9 management?

10 DR. BENDELL: Urbanization being a stress
11 on the landscape which has a result on the landscape
12 patterns and, consequently, the deer population.

13 DR. MIDDLETON: Excuse me, probably even
14 more agricultural clearing there might lead to that
15 situation of...

16 MADAM CHAIR: But are you saying that the
17 landscape approach you're advocating doesn't deal with
18 that situation because it's in southern Ontario, the
19 landscape planning approach would deal with the timber
20 issues on the timber management side?

21 DR. SUFFLING: The landscape planning
22 approach could deal with that issue, but obviously it's
23 severely constrained by social and economic
24 constraints.

25 The reason -- the fundamental reason for

1 the very, very high deer population in Rondeau is
2 two-fold: One is that the area is surrounded by a huge
3 food bucket; namely, the corn lands all the way around,
4 and it's also about the only shelter both physically
5 and from hunters and deer are not stupid. So, when
6 they have finished eating in the corn lands then they
7 go into the Rondeau forest to hide out under certain
8 circumstances and that's the root of the problem. You
9 have a lack of predators and this huge food bucket just
10 outside the park, so the deer population mushrooms, but
11 then there's nothing to control it, so we have to
12 substitute for the predators in that situation.

13 DR. BENDELL: But the corridors would be
14 part of it.

15 DR. SUFFLING: They would help.

16 DR. BENDELL: And corridors are very much
17 talking about what you do to the landscape, because -
18 I'm not sure this would work, I would like to look at
19 the situation - but, for example, if you have river
20 valleys feeding into Rondeau, as they must be, I would
21 be concerned about having a good amount of vegetation
22 in those river side areas and hopefully give moose an
23 opportunity, including deer, to move over the
24 landscape, you see, but if you keep them in highly
25 fragmented habitats even though they might temporarily

1 move into a corn bucket, as Roger says, they're not
2 likely to move very far away from the forest which is
3 basic protection for them.

4 MADAM CHAIR: And the second part of my
5 question was -- and, again, this little newspaper
6 article is not informative and I don't pretend to
7 understand it.

8 DR. BENDELL: Well, you must have saw
9 that in part in Wheatley National Park.

10 MADAM CHAIR: Yes.

11 DR. BENDELL: And there we've had a very
12 successful hunt, I think, which everyone is happy about
13 that.

14 DR. QUINNEY: You're referring to
15 (inaudible).

16 MR. MARTEL: The deer aren't.

17 MADAM CHAIR: This is all fascinating
18 stuff, but the second part of my question had to do
19 with if the explanation in the paper is at all
20 accurate, the fact that the deer cull was for the
21 purpose of protecting rare plants.

22 Now, where in landscape management, as
23 you are proposing it be done, is a decision like that
24 weighed, that one species is to benefit and another
25 species is to not benefit?

1 DR. BENDELL: Well, again, I feel that
2 basically we are to be the stewards of the land and we
3 do that with all humility and with the best information
4 available to us, and I would say that if there are rare
5 plants there which have a very important reason for
6 their existence and the deer are threatening them and
7 we have lots of, as far as we know, of those
8 white-tailed deer, then my trade off would be for the
9 plants.

10 DR. MIDDLETON: But we also have to
11 remember - I agree entirely with that - but we also
12 have to remember that this issue that we're talking
13 about in Rondeau is, sort of, like the doctor. The
14 human doctor's dilemma when he or she says: Well, do
15 we cut off -- do we amputate this leg to prevent
16 gangrene from spreading through, you know, as a
17 tradeoff between one thing or another, but it's really
18 once you're to that stage a symptom of an acute
19 pathology and really the whole landscape approach that
20 we are advocating is preventative medicine. If I can
21 use that idea, that when we're not in such an acutely
22 transformed landscape as we have around Rondeau, that
23 we have the opportunity to prevent these things from
24 happening in the first place if we take a broader view,
25 recognizing that simply setting up a park and saying:

1 Well, we've done our job for bioconservation the rest
2 can go away, it's a very good example that that simple
3 approach will simply not work.

4 It's also I think a good example of how
5 the -- constraining the choice of what organisms one
6 considers valuable in the first place can backfire
7 because, as Dr. Bendell pointed out, this is probably
8 an issue which involves rare plants, the herbivores,
9 certainly the predators that weren't there in the first
10 place and it was -- it would only be by addressing that
11 as the whole interaction of all those species that we
12 could prevent it coming down to one species versus
13 another type of situation.

14 MADAM CHAIR: Thank you.

15 MR. MARTEL: In your process though how
16 does the planning alter significantly from what it is
17 to deal with those items or issues, not just Rondeau
18 but across the area of the undertaking, and does the
19 restructuring, as I understand it, that's going on in
20 the Ministry make it easier to utilize your proposal
21 as, let's say, the one that existed or is in a state of
22 flux right now at MNR?

23 DR. MIDDLETON: I'm not sure that I can
24 comment on the restructuring within the Ministry. I
25 don't know enough about it.

1 MR. MARTEL: You see, this historical
2 case that we're involved in, by the time we get to the
3 end of it nothing will be in place that started when we
4 started the process, including the whole restructuring
5 of the Ministry, and one looks at something, what was
6 in place three years ago when we started but, in fact,
7 my understanding is there's a whole restructuring, and
8 how does the whole planning and decision-making
9 apparatus kick in?

10 Maybe Mr. Freidin will present that when
11 he brings more evidence.

12 DR. BENDELL: Sir, my comment on that
13 would be, I can say that when we get more full
14 participation at the table in management and
15 biodiversity decisions, when the voices of the various
16 people that have a concern about the landscape sit down
17 on a more or less equal basis and talk about the
18 problems and come to satisfactory group decisions, a
19 fair and equitable tradeoff amongst the participants.

20 I come back to this problem of tunnel
21 vision again which I tried to make with my little bit
22 of pictures about how we look at things and there's too
23 much, as I say, of the various groups looking at it one
24 way and the other way and not really sitting down and
25 seeing how it's all part of an interacting system. I

1 mean, when we start talking about how this thing works
2 as a collection I think we'll be farther ahead in
3 solving problems.

4 MR. MARTEL: The problem still remains
5 that the planning system that both MNR has presented
6 and the Industry has presented, while you have a number
7 of participants at the table most of them are local.
8 You need a second or third level that are somehow
9 involved - I think the Industry is more inclined to
10 that - so that you get a broader perspective so that
11 the intermeshing, in fact, can go on.

12 I don't see that in the MNR's proposal.
13 I don't know if you've seen MNR's proposal, but to make
14 sure it works and intermeshes right across the area of
15 the undertaking as opposed to whoever's forceful in a
16 given unit, which I think might occur if you've got
17 strong representation in one area from a group -- it's
18 the old axiom, the squeaky wheel or whatever it is gets
19 what they want and it's the universality of this
20 applying that bothers me.

21 DR. BENDELL: It's also the person that
22 has the information that gets what they want.

23 MR. MARTEL: Yes.

24 MADAM CHAIR: Mr. Lindgren?

25 MR. LINDGREN: I would just respectfully

1 point out to the Board that I think we're treading
2 dangerously onto issues involving timber management
3 planning and these are wildlife biologists. Integrated
4 forest management planning will be dealt with by our
5 Panel 10 and, with the greatest of respect, I would
6 suggest perhaps that these sorts of issues be raised at
7 that time.

8 MR. CASSIDY: Well, I may have some
9 agreement, Mr. Lindgren, except to point out that I
10 know you don't need counsel, Mr. Martel, to give the
11 fairness to your questions, but they were qualified as
12 environmental planners.

13 And I have some sympathy for Mr.
14 Lindgren, having been in the same situation, but given
15 that they were qualified as environmental planners, I
16 find this conversation very appropriate.

17 MR. MARTEL: Well, I can't worry about it
18 because, you see, I have to ask questions that come to
19 my head when I have people before me who present their
20 stuff and I'm sorry I don't put everything in a neat
21 little niche, but I take the opportunity because this
22 is a whole new process that I want to assure I
23 understand before I move on, and it is so new that the
24 ink is still drying on the paper virtually as we speak,
25 so I just raise the questions I think that are

1 necessary.

2 MR. LINDGREN: Mr. Martel, I didn't mean
3 to suggest that you shouldn't be raising these
4 questions, I'm just saying that we might be pushing
5 some of these witnesses beyond their area of expertise.

6 MR. MARTEL: They'll tell me that,
7 they're big boys.

8 MR. LINDGREN: I'll sit down.

9 MADAM CHAIR: Thank you, Mr. Lindgren.

10 Mr. Hanna, would you like to continue
11 with your cross-examination.

12 MR. HANNA: Thank you, Madam Chair.

13 Q. Dr. Middleton, you had said that you
14 hadn't worked out all the administrative implications
15 of the approach that you're bringing forward and I
16 appreciate that, but it seems to me that there are
17 certain very specific recommendations you're bringing
18 forward and I'm not going to ask you how the Ministry
19 should administratively set up to deal with this, but I
20 want to make sure I understand the implications
21 administratively of what you're proposing technically.
22 That's where I'm coming from.

23 DR. MIDDLETON: A. Very good.

24 Q. Now, as I understand it, and I
25 thought we agreed to yesterday, the criteria would be

1 examined at four levels?

2 A. Not four levels, at a continuum of
3 levels. The logic here is that we started from the
4 Ministry's position that certain provincial-wide goals
5 would be adhered to.

6 We are suggesting that those are good,
7 but not sufficient because there's also, if taken to
8 the ridiculous extreme, it's possible to imagine cases
9 where the provincial goals are met, but there are very
10 significant changes on a regional basis or smaller
11 basis which we wanted to get into the framework as
12 well.

13 The four levels, the four levels do not
14 apply here. We're saying there should be -- the goals
15 should be met for every level no matter how you break
16 it up. A continuum of levels down to some lower limit
17 as we described.

18 Q. But you've given a lower limit.

19 A. Yes.

20 Q. In criterion 7 it says the ecosection
21 will be the lower limit.

22 A. Quite so.

23 Q. And you said the upper limit is the
24 provincial level.

25 A. That's right.

1 Q. And I'm going to be going through
2 today, specifically, how we're going to calculate these
3 criteria, these statistics, and I want to understand
4 what specifically they mean.

5 Now, I can't deal with a continuum unless
6 you want to give me an integrated function that I'm
7 going to provide some fancy transformation across --
8 going from an ecosystem level to a provincial level, I
9 can't handle it. I have to -- there's going to have to
10 be some specific point, some geographic limit that it
11 has to be tested at. Do you agree with that?

12 A. No -- well, I agree with the concern,
13 let me explain why I don't think it's a concern.

14 One of the criteria of the classification
15 system as described both by ESSA and by ourselves is
16 that it be a hierarchical system. That sounds like an
17 Archaean detail, but this is where it becomes relevant,
18 you know, a hierarchical system of classification as we
19 describe is one where each of the succeeding levels of
20 organization is integrated with the lower ones and with
21 the upper ones.

22 It is not a new sort of information at
23 stages 2 and 3 and 4. It's not new types of
24 information at ecodistrict and ecoregion and
25 ecoprovince. These are different places to stop and

1 take one's breath and look at the view, if you wish.

2 Just as with topographic maps, one might
3 have four different scales which are commonly printed.
4 This doesn't mean that those four scales have any
5 reality in themselves. What we're asking - and maybe
6 the topographic map analogy would be a good one here -
7 what we're asking is that there be no deviation from
8 these criteria at any scale over those range, which
9 means, at least, that if you take this scale, this
10 scale and this scale the answer will be no, but it's
11 not limited to those four. Those four have no
12 particular special standing in themselves.

13 Q. So, is it fair to say from what you
14 just told me that it may be necessary to calculate
15 these six statistics for the provincial, ecoregion,
16 ecodistrict and ecosection level plus perhaps ten
17 intermediate levels that someone might decide are
18 appropriate?

19 A. Well, again, the question is of
20 somebody deciding that it's appropriate, which comes
21 down to the question of what test one puts into one's
22 procedures for getting the compliance for these.

23 And I'll stress again, this is not
24 something which we have pretended to spell out in any
25 detail. Not at all to say that it's trivial, it's not.

1 It's essential that if such a system be put into place
2 there are very clear protocols for deciding where and
3 when and by whom all these things are done. But there
4 are numerable systems which could be put into place
5 that would do that job.

6 One of the things that the ESSA research
7 project is suggesting is that we look carefully at the
8 appropriate ways of doing that, and I cannot give you
9 now an answer or even my best guess about the way that
10 that would be done. Partly, because it requires a lot
11 of knowledge about administrative structures and so on
12 to determine which is appropriate and convenient.
13 Information which I do not have.

14 Q. Can you indicate to me where in
15 Exhibit 1714 that ESSA discusses the levels at which
16 landscape biodiversity should be monitored and used as
17 a measure of timber management performance?

18 A. Give me a moment I'll take a look.

19 MADAM CHAIR: What page are you on, Mr.
20 Hanna?

21 MR. HANNA: I'm not on a page, it's an
22 open ended question. It's Exhibit 1714, it's the ESSA
23 report.

24 MR. MARTEL: Would you repeat the
25 question, Mr. Hanna?

1 MR. HANNA: Yes. I understood from Dr.
2 Middleton's last response that this matter is a subject
3 of discussion in the ESSA report in terms of the
4 appropriate levels to test whether biological diversity
5 in the landscape is being achieved. And I'm not
6 familiar with where it is in the report and I've asked
7 him to refer me to it.

8 DR. MIDDLETON: If I could refer you to
9 page 27 of the report, Task 2 which is labeled
10 Stratification Scheme.

11 MR. HANNA: Q. And this is under Work
12 Plan A which is describing the Ontario land base at the
13 ecoelement level?

14 DR. MIDDLETON: A. That's correct.

15 Q. Yes.

16 A. On page 27, Task 2, Stratification
17 Scheme the first sentence says:

18 "The stratification scheme is the method
19 by which the land base of Ontario will be
20 divided to serve as a framework for
21 sampling design and sampling programs."

22 Now, that is what I understand to be the
23 framework of the thing that we're talking about here,
24 the sampling design and sampling program.

25 Keeping in mind that this landscape

1 classification scheme has been described elsewhere in
2 the document as a central key to everything that
3 happens from that stage on. This framework for
4 sampling design and sampling programs is for setting
5 out the framework, in the first place, for classifying
6 the information that comes through it, for classifying
7 all other information into the same scheme and I
8 would -- I read this as saying that this would also be
9 the scheme by which administrative and monitoring
10 compliance decisions would be made as well.

11 My understanding is that this design of
12 this very framework is one of the questions of central
13 importance from the start and before that research is
14 done I continue to say that I cannot answer your
15 question in the detail that it will eventually happen.

16 Q. Well, I want to understand then.
17 It's your expectation that coming out of this research
18 project, on other wildlife, that there will also be
19 analysis done in terms of administrative structures in
20 terms of timber management planning in the province?

21 A. No, my understanding is that the
22 central logic of the research plan here is that we will
23 have a central framework on which all aspects of the
24 issue will be hung, scientific, the wildlife, the
25 biodiversity, the forest and all the necessary

1 appendages to those, certainly including monitoring,
2 for scientific purposes and for compliance purposes.

3 One of the things which excites me about
4 this process and this document is that it, in my
5 opinion, has recognized that separating out these
6 issues; that is to say, having a separate framework for
7 dividing up the question for this issue or that issue,
8 separating out scientific so-called issues from
9 administrative issues it not a good way to go.

10 It recognizes that only by having this
11 central framework for all of us to use, administrators
12 and scientists alike, that we're really going to have
13 the breakthrough that I think it could lead to.

14 Q. All right. Well, my client isn't, as
15 I said at the beginning, is not disagreeing with the
16 need for this central organizational system but, as you
17 said at the beginning of your evidence, you've gone
18 beyond that and put this into an operative term from a
19 management planning point of view to deal with
20 biodiversity, and that's the part -- it's that step
21 that I'm trying to deal with, and is it not fair to say
22 that this report does not -- and this whole exercise,
23 the ESSA exercise, does not in any way come to grips or
24 is not proposed in any way to come to grips with that
25 administrative side or that operational side that

1 you've proposed?

2 A. I would not agree with the statement
3 in any way. As I have just tried to explain, it is my
4 opinion quite clearly. It's not trying to develop the
5 administrative systems that would be necessary for
6 doing it, it is nonetheless doing it in the context of
7 developing a framework which will tie together all
8 aspects of the scientific and administrative parts of
9 the system.

10 To go back to your original analogy.
11 When you asked me whether it's going to be looked at
12 four level -- sorry, the compliance is going to be
13 looked at at four hierarchical levels or 10 or three,
14 or whatever. It is precisely that sort of question
15 which I understand this process will answer as it
16 designs what that classification framework is in the
17 first place.

18 Q. All right. Back to my question.
19 You've indicated that out of the ESSA workshop you
20 expect -- or out of the ESSA exercise you expect to
21 have the four levels refined?

22 A. No, I don't think I've said that. If
23 the four levels that we're talking about here are the
24 four labels of ecoprovince, regon, section, so on, are
25 the words that we are using from the existing place,

1 from the existing systems that are there.

2 One of the things that both our documents
3 and the ESSA document point out is that we have lots of
4 good starting materials, things like FRI, FEC OLI, CLI.
5 It says very explicitly that none of them, none of them
6 is adequate for the job at the moment, but that all of
7 them provide good starting points and good insight into
8 it.

9 The whole first thrust here is to develop
10 a system which is adequate for all the tasks and, by
11 definition, from those starting points. It will not
12 have the characteristics of any of the existing systems
13 in whole. So this four-level thing, like all of the
14 others, is not absolutely guaranteed to be the one that
15 is there in the final version.

16 Q. All right. So you're saying we may
17 not have ecosystems, ecosections, ecodistricts and
18 ecoregions. It may be some other configuration of the
19 classification system that may be...

20 A. Possibly so.

21 Q. All right. Well, let's just accept
22 that there's four levels and we won't put a label on
23 them. We'll say that label is going to evolve at some
24 point in the future.

25 A. Keeping in mind that these are labels

1 on a continuum of scales, that they're not separate
2 things.

3 DR. SUFFLING: A. And it's an
4 hierarchical system.

5 Q. I understand hierarchical systems.
6 The question I'm trying to get at is: In terms of
7 achieving the objectives that you have set forward,
8 would you want to see those objectives tested,
9 reviewed, whatever term you want to use, at a minimum
10 of four levels; is that a reasonable sort of testing
11 that you would want to see happen?

12 A. Yes, I think it is. Now, I could
13 expand on that in the sense that the feeling I'm
14 getting from the line of your questioning is that
15 you're worried about the practicability of doing this.

16 Q. Those would be all of my questions to
17 you probably the remainder of the day.

18 A. To use an analogous situation, if you
19 take something like two management figures as collected
20 by district offices or fire figures, fire statistics
21 these are assembled at various levels of aggregation
22 through the province and they are published in the
23 statistical digest partly at the provincial level,
24 partly at the regional and district level.

25 The main problem with obtaining such data

1 is in getting the original data. The question of
2 aggregation later on and presentation of the data or
3 use of the data at different levels is much less
4 fundamental.

5 Q. Dr. Suffling, I appreciate your
6 assistance to try to shorten this, but it's much
7 shorter if we just follow the question. My question is
8 a simple one, is four levels the appropriate -- would
9 that be a reasonable number to start with, and your
10 answer was yes, and the rest really didn't help me in
11 terms of proceeding.

12 Now, in terms of dealing with an
13 individual timber management plan - and let's say we
14 haven't redesigned the timber management plan
15 boundaries for the time being - in order to evaluate
16 the acceptability of that timber management plan, we
17 would have to look at that timber management plan in
18 the context of the ecosection; correct?

19 A. Correct.

20 Q. As a minimum?

21 DR. MIDDLETON: A. As a minimum,
22 correct.

23 Q. And as you pointed out, in a
24 hierarchical system, if we go to the next level, the
25 ecodistrict, we're going to have then a combination of

1 several timber management plans, no new data, but
2 simply a new aggregation of the existing data; correct?

3 A. Correct.

4 Q. And so you would want to test it at
5 the ecodistrict level by taking that aggregation and
6 saying: Have we deviated outside the six criteria?

7 A. Be an appropriate question to ask,
8 yes.

9 Q. And we would want to do the same
10 procedure at the ecoregion level except we'd have a
11 larger aggregation now of timber management plans and
12 the same thing at the provincial level?

13 A. Yes.

14 Q. Now, as I understand your evidence,
15 Dr. Suffling, you've indicated that as you go higher in
16 the hierarchy that the statistics will become more
17 stable.

18 DR. SUFFLING: A. They should generally,
19 yes.

20 Q. And, particularly, if you look at any
21 particular individual forest management unit, its
22 contribution to the whole will become progressively
23 less and, therefore, ultimately have less of an impact
24 as you go higher on the hierarchy?

25 A. It would tend to do so.

1 Q. But the higher level statistics are
2 still the aggregate product of the individual timber
3 management planning decisions?

4 A. Yes.

5 Q. So, if we were approaching a boundary
6 at the section level, the district level, the region
7 level or the provincial level, we'd still ultimately
8 have to convert that into a decision at a timber
9 management plan level; correct?

10 A. Yes, you would have to -- eventually
11 you would have to go back down. You would see - let's
12 say at an ecoregion level - you would see a trend and
13 it might be something you liked or it might be
14 something that the managers doing the work didn't like.
15 Now, assuming that it was something that was ontoward,
16 it was unexpected or unacceptable, you then have to
17 translate that back down to some kind of general policy
18 directive of the region level in this case which would
19 then go back down to the other levels through the
20 administrative unit so that different officials would
21 have to translate the targets or the changed directions
22 into actions on their own land base.

23 Q. So, there would have to be someone in
24 the administrative structure operating at the
25 ecosection level, the ecodistrict level, the ecoregion

1 level and the province level, in order, to see how
2 things are coming about?

3 A. Yes. What it would be doing, in
4 fact, is to make explicit certain information which
5 might otherwise be unavailable or would be lost, so
6 that those people making the decisions, perhaps right
7 up to the ministerial level, the cabinet level, would
8 have some kind of feeling for the implications of what
9 they were doing with the landscape.

10 MR. MARTEL: Could I ask a question, Mr.
11 Hanna. How different is that really than what's
12 occurring now, you know, you might be doing it on an
13 ecosystem as opposed to a management unit?

14 Outside of the fact that the boundaries
15 are a little different, rather than deciding that a
16 road was the boundary line or some artificial line that
17 we have drawn, let's say we establish it along the
18 criteria you're suggesting, essentially the monitoring
19 of what's going on, would it not be the same process as
20 in place now, except that the boundaries are different?

21 DR. SUFFLING: In some cases the
22 boundaries might be --

23 MR. MARTEL: Could be the same.

24 DR. SUFFLING: They could be the same or
25 they could be completely out of kilter with the

1 biological reality, the ecological reality, and in that
2 case the individual manager could make decisions which
3 would be very different according to the position of
4 the boundary.

5 Now, I know I've got an example and it
6 isn't through forestry or not in forest management, but
7 if you'll indulge me a little bit I can point it out.

8 A few years ago they were doing an
9 environmental impact assessment for an airport
10 expansion at Windsor and there was concern that was
11 raised by local naturalists about a snake called the
12 Butler's garter snake. Now, it looks to all intents
13 and purposes like the ordinary garter snake that we all
14 see here in woods and fields, but it's a Prairie animal
15 as opposed to the kinds that you get around Toronto and
16 further north.

17 Now, the concern was raised that the
18 Butler's garter snake was a very rare animal in
19 Ontario, and indeed it is, okay.

20 Now, just consider this as a hypothesis:
21 Supposing the War of 1812 had gone very differently and
22 the Canadian and the British and the natives and so on
23 had wamped the Americans and we had a Province of
24 Michigan which has got a lot of Butler's garter snakes
25 in various places, then we wouldn't be half as worried

1 about in Ontario as we were in that particular case;
2 conversely, if the Americans had wamped the Brits and
3 set the boundaries somewhere on the Ottawa River, then
4 they would just be considering it as a local
5 conservation rather than the national and rare species.

6 So administrative boundaries do tend to
7 affect our perceptions of the significance of what's
8 going on ecologically and one of the purposes -- one of
9 the driving forces behind us suggesting this region,
10 this idea of using the ecological regions and districts
11 and so on is to align or to induce the thing in a more
12 ecological way.

13 MR. MARTEL: Yes, okay, but I a'm saying,
14 let us -- as a given these lines are in place rather
15 than the boundaries we now have established we put them
16 along ecological boundaries, I think what Mr. Hanna is
17 trying to say to you is: Okay, how is it different?

18 I mean, you're still going to have
19 balances and checks at various levels, whatever those
20 levels might be; aren't you?

21 I mean, forget all the jargon for a
22 moment.

23 DR. MIDDLETON: It's correct to say that
24 this question of realignment of boundaries along
25 ecological limits is a refinement of the system, it's a

1 luxury, and we acknowledge in the terms and conditions
2 that this is something which can be done at a later
3 date, it's not essential for the logic of the system
4 for the reasons that you give.

5 MR. MARTEL: All right. The next step
6 then is, you have a timber management plan, and to make
7 sure that everything is in the aggregate occurring
8 properly, at the provincial level and it goes down to
9 the regional level and it goes down to the district and
10 to the forest level, whatever it is, you're still going
11 to have to have a similar process and way of checking
12 to ensure that what is planned for has been achieved.
13 How different is that going to be?

14 DR. MIDDLETON: Well, the difference that
15 we perceive is that the proposals that Mr. Hanna has
16 been talking about putting actual numbers on things in
17 the spirit of an adaptive management system, instead of
18 the decisions being made on the basis of similar to and
19 other terms of that sort, you know, there will now be
20 explicit and quantitative and of a form which can be
21 unambiguously decided, compliance or otherwise, by the
22 person making the decision or any other outside person
23 with access to the information. That's the only reason
24 for having the numbers there in the first place.

25 As Dr. Baskerville pointed out in his

1 speaking to you, if we don't have these type of very
2 clear, consistent and unambiguous targets, then the
3 whole system is not of the sort where we can get
4 convergence to what we want in our plans or not.

5 DR. BENDELL: What I would add to this
6 discussion is the information that goes into the
7 system, what's on the land, the values of the land, and
8 that they're recognized, catalogued and evaluated and
9 traded off whichever way you wanted to go.

10 And one thing that comes to my mind are
11 some of the spectacular moraines, glacial moraines,
12 drift lines, if you will, that we have say in the
13 Gogama region - I come back to that again - and
14 currently these are being lined to build beaches at
15 various lakes that lack beaches.

16 I don't want this to stand as a
17 significant example, but what I'm saying is that
18 leaving these beach lines in place and being properly
19 interpreted are a real feature of the landscape and
20 they shouldn't be, you know, treated -- ignored as they
21 are now. We value the landscape and the way they're
22 viewed, and this should go on and on.

23 So my view is to broaden our appreciation
24 of what's in the landscape, more information, better
25 information.

1 MR. MARTEL: But that is your first step;
2 isn't it?

3 DR. BENDELL: Exactly, realigning.

4 MR. MARTEL: Mr. Hanna is taking you
5 beyond that step though, I think. He's talking about -
6 and I come back to it again - he's talking about once
7 you the info in place and you have a plan - and he
8 started out with an individual timber management plan -
9 how do you check, I think what he's looking for and
10 what I'm trying to understand, and I guess I'm asking
11 you, how much difference is there, once everything is
12 in place and you have a timber management plan, what
13 are the steps you're going to follow to make sure that
14 what you've set out is achieved or, if it's not being
15 achieved, how do you change in midstream, shift gears
16 and start to do the appropriate thing?

17 DR. BENDELL: Well, I'll pass it to my
18 colleagues, I usually say that --

19 DR. SUFFLING: Do you mean that in an
20 administrative context or a technical context?

21 MR. MARTEL: Well, administrative. I
22 think Mr. Hanna was looking for both, administratively
23 how do you detect when something goes awry and then
24 what do you do to make sure that it's rectified?

25 DR. BENDELL: I would generally say, just

1 to finish up where I stand on this, that we know what's
2 on the ground.

3 MR. MARTEL: Yes.

4 DR. BENDELL: And then we plan for it on
5 an ecological basis, and I doubt that a timber
6 management plan would take that -- well, take either of
7 those steps.

8 DR. SUFFLING: Yeah, just to expand on
9 that. You could look at something like photos or air
10 photos around the province and I think you can see tis
11 in other jurisdictions and countries, and when you look
12 at these very high level air photos or satellite images
13 you can see administrative boundaries on the landscape,
14 and this applies the world over. You can see the
15 boundary between Egypt and Israel, you can see the
16 boundary on a Landsat photo or Landsat image between
17 South Africa and it's acquired state and you can see
18 the boundary between Minnesota -- in Montana between
19 Canada and the U.S. very, very clearly, a completely
20 different land use system.

21 On a slightly smaller level, slightly
22 lower level, larger scale, you can look at air photos
23 or satellite images of northern Ontario and, in some
24 cases, you could see a line which marks the edge of one
25 planning or administrative unit and begins the next

1 one.

2 Now, plainly for that to be visible at
3 any of those scales I've mentioned there has to be a
4 real difference in land function between two adjacent
5 units, and all that we're saying really on a basic
6 level is that if you have one ecological unit that has
7 some integrity in uniformity, then you shouldn't see
8 the line, you should see a management across that unit
9 which in some way recognized the ecological reality
10 there so that our administration, our way of planning
11 and doing things, fits in with the land rather than
12 bullying and pushing the land into a shape that we
13 want.

14 And I guess fundamentally that represents
15 a political or a philosophical outlook which runs very
16 deep, and some people perhaps in the hearing or perhaps
17 elsewhere in society would not agree with me on that,
18 but that's where I'm coming from.

19 MADAM CHAIR: Dr. Suffling, timber
20 management can only do so much, we have no control over
21 the planning of municipalities, we have no control over
22 Ontario Hydro, we have no control over other
23 developments that take place in northern Ontario, but
24 your ultimate objective would be that all planning
25 would take into consideration these ecological systems?

1 DR. SUFFLING: No, Ma'am I don't think
2 so. If you were looking at a health plan, plainly the
3 boundaries that you would want to recognize would be
4 demographic and social, or maybe there would be some
5 inference from transportation networks, so in the same
6 way you would want the driving forces to be logical or,
7 how can I say, real rather than administrative, and the
8 frightening thing about administrative systems
9 generally - and I'm not talking about Ontario or the
10 Ministry or anybody in particular - is that they tend
11 to take on, as you know, a reality and a concrete form
12 of their own and you end up in a sense with the tail
13 wagging the dog.

14 MADAM CHAIR: But under your proposal
15 wouldn't ecological units also be the subject of
16 variable management. I mean, if it depends on
17 administration and management, then one unit will be
18 better managed for any reason than another unit, you
19 won't have an even outcome?

20 DR. SUFFLING: No, different people will
21 still feel differently about it, that is a given.

22 MADAM CHAIR: Mr. Hanna?

23 MR. HANNA: Q. Now, back to the four
24 levels and maintaining tracking of how well we're
25 achieving the criterion that you've set forward.

1 You've indicated that if we start -- if
2 we know that we have gone astray or it looks like we're
3 going astray that there would be some feedback in the
4 system; correct?

5 DR. MIDDLETON: A. That's correct.

6 Q. And just as an example, if it was
7 your criterion that deals with diversity, criterion 3,
8 say up -- we're going to be more than 50 per cent off
9 of our acceptable, or we're going to reduce it below
10 the 50 per cent allowable variation, we've got to take
11 some action, that's what you would want to see happen;
12 correct?

13 It's easier if you say yes because the
14 court reporter has to put nodding each time that you
15 don't say it.

16 A. Yes.

17 Q. All right. Now, if we were dealing
18 at, let's say for example, the ecoregion level and we
19 saw that we're coming up against the diversity
20 constraint, that may involve -- let's say it involves
21 10 timber management plans, 10 FMUs, that means we have
22 to go back to the FMUs, all 10 of them, and say you've
23 got to change something; is that not right?

24 A. There's a decision even before that
25 to be made. It, depending upon the scale both in space

1 and time, it might be that the feedback mechanism is in
2 the design of the next plan, not the current one but
3 the design of the next one.

4 I'm not saying that's the best way, I'm
5 just trying to point out that even at this early stage
6 there's a decision to be made about the feedback
7 mechanism in the system.

8 Q. Okay. Well, I'm going to come to the
9 actual timing in a moment, but I just want to make sure
10 I understand the concept that you've brought forward
11 and the concept is, there has to be some feedback and
12 there has to be some modification, some change in
13 actions as a result of that feedback; correct?

14 DR. MIDDLETON: A. Yes.

15 DR. SUFFLING: A. I guess we disagree on
16 it. I would not agree with that in entirety. The
17 reason for this is that if one was doing modeling of
18 timber production and landscape changes, as should be
19 done, you might anticipate future changes that would in
20 fact already be on the road to correcting the problem,
21 you might have to wait 10 or 15 years for that to come
22 about, but when you say some action would be needed, I
23 think I would prefer to substitute the phrase some
24 conscious decision would be needed.

25 Q. Okay.

1 A. Do you let things ride on the
2 understanding that this is, let's say, politically
3 expedient, that would not always be a good reason but
4 it might be necessary, do you let it ride on the basis
5 that the ecosystems themselves would be self-correcting
6 ultimately on the basis of modeling, or would you start
7 to exert some kind of administrative or political
8 pressure to have more cutting or less cutting in the
9 future to rectify the problem.

10 Q. Is it fair that implicit in what
11 you've just said is that the statistics have to be
12 looked at both in -- have to be looked at in terms of
13 their temporal profile; in other words, we have to make
14 some projection of how these statistics are going to
15 change over time?

16 A. Yes, I think so.

17 Q. And since the effects of timber
18 management activities persist for at least one rotation
19 of the forest, is it not reasonable to project the
20 statistics at least over that period?

21 A. Yes, but I would qualify that. You
22 would be gazing into a crystal ball; you would perhaps
23 have a very good idea what was going to happen in the
24 next five or 10 years, you would have a less precise
25 idea beyond that, but when you were looking one

1 rotation in advance, it would be a very, very sort of
2 horristic or fuzzy notion of what was going to happen
3 which would be dependent upon, you know, world
4 economics, climate change, who knows.

5 Q. Are you saying we shouldn't do that?

6 A. Changes in technology.

7 Q. Are you saying we shouldn't do that
8 analysis, or that we just have to do it with care?

9 A. No, I'm just saying that when you're
10 looking that far ahead, maybe 80 or a hundred years,
11 you have to be -- you have to recognize that your view
12 is clouded.

13 Q. Okay. Now, in order to calculate the
14 statistics one requires a definition of the stand now
15 and in the future; correct?

16 DR. MIDDLETON: A. That's correct.

17 Q. And that definition has to be in
18 geographical terms, this stand, this shape, this
19 adjacency see with respect to other stands, all those
20 types of issues?

21 DR. SUFFLING: A. Yes.

22 Q. Now, are you familiar where in the
23 timber management planning process that the cutting
24 patterns are decided?

25 A. I would imagine that ultimately -- I

1 suspect from memory that ultimately they're decided in
2 any given plan, the precise pattern.

3 Q. And sometimes they're even decided in
4 a project below the annual work schedule, in fact, the
5 annual work schedule often doesn't have specific
6 cutting patterns in it; are you aware of that?

7 A. I believe that's the case.

8 Q. So that in order to obtain the
9 geographical resolution that is required to calculate
10 the statistics one has to, on an annual basis at least,
11 review the forest.

12 Now, when I say the forest, this is the
13 forest; in other words, all the province?

14 A. I should think that every forester on
15 every piece of land should be annually looking at the
16 pattern of work which is done and so there would be -
17 in fact I know that they're doing it - there would be
18 an opportunity at that level for the forester in
19 particular, because that's the person who's going to
20 be, you know, ultimately making decisions on the
21 ground, they're going to be walking out there in their
22 work and looking at the place, they're the ones who
23 will be making the decisions and they're the people who
24 must be completely familiar and comfortable with the
25 system and they must understand what its objectives are

1 so that they can work intelligently.

2 You don't want people working by rote,
3 for instance, you want them knowing where their set of
4 functions fits into the whole picture.

5 Q. So each year the forester -- the unit
6 forester would be charged with recalculating these six
7 statistics for his forest management unit to see how
8 where he's going matches up with where he should be
9 going?

10 A. No. I would suspect that the person
11 on the ground will be working -- the unit forester
12 would be working to, what shall we call it, a broad
13 prescription.

14 Q. For example.

15 A. A broad prescription that would -- it
16 would have come down from a higher level at some time
17 in the past and it would say, for instance, generally
18 speaking where you have, let's just take as an example,
19 as a given, okay, not just (inaudible) but
20 ecologically, generally speaking where you have large
21 contiguous stands of mature black spruce you will be
22 cutting in this kind of pattern, is an example, or
23 perhaps the memo would say, and then the discretion
24 would be left to the individual to do what is
25 appropriate given, the demands from the mill and where

1 the roads were and any other problems that come up on
2 the ground.

3 Q. Well, when do we do the
4 reconciliation at all of the levels in terms of each of
5 the statistics, because we can only do the
6 reconciliation when we have a specific pattern of the
7 forest that we're currently cutting in and regenerating
8 in and that we're proposing to do in the future?

9 A. I would envisage that to do this in
10 any kind of practical way a lot of the, a lot of the
11 information is going to be collected in a high tech way
12 and in a very centralized way, in the same way that air
13 photos are flown, you know, contracts are let out from
14 the Ministry here in Toronto, they're are not let out
15 by district foresters.

16 The district forester has an input in
17 saying what he or she wants or needs, but there are a
18 lot of centralized high tech functions that are done at
19 that level, and then statistics can be computed for
20 each level, distributed as needed.

21 Q. Well, let me understand this then.

22 A. You know, I wouldn't envisage
23 hundreds of foresters going out, you know, with their
24 tape measures measuring the forest. I don't see it
25 that way.

1 Q. But if the decisions in terms of the
2 pattern of the cutting are only made on an annual basis
3 at best--

4 A. Right.

5 Q. --and we're trying to maintain
6 compliance with these criterion both now and in the
7 future--

8 A. Yes.

9 Q. --who is going to go out and say:
10 Here's the pattern we've cut the forest in in terms of
11 diversity and patch size and connectiveness and all of
12 the others, and say: Okay, well we're doing all right
13 over here at the ecosection level, over here we're
14 modeling fine but at the ecoregion level we've got to
15 something over here and provincially we've got an issue
16 here.

17 It seems to me that you're going to say
18 to the forester: You don't have to worry about that,
19 you'll hear from Queen's Park on that and don't worry
20 unless the phone rings. Is that what you're telling
21 me?

22 A. To some extent that will be true, not
23 entirely but to an extent, that just as the province
24 has the central bureaucrat in Toronto probably have a
25 much clearer idea of what the demand for different

1 species will be in the next five years provincially or
2 globally, they have a clearer idea than the district
3 forester - no disrespect to district foresters or unit
4 foresters - so they will tend to pass down directives
5 or recommendations as to how certain practices should
6 be done.

7 Q. You said demand for species, you're
8 talking about world demand for lumber; is that what you
9 refer to?

10 A. I'm making it an analogy with what
11 what often happens in economic terms, that the mills
12 and the district foresters are liaising directly but
13 there's a lot of liaison at the top level between
14 companies and the Ministry, decisions are made at that
15 level and then passed on down.

16 Q. What is the information that would be
17 collected at the local level that would feed into these
18 six criterion and when would that information be
19 collected?

20 A. A great deal of that information will
21 be collected from air photos or satellite imagery
22 ultimately.

23 Q. And how often?

24 A. Satellite imagery, if you take
25 something like Landsat, is available at this latitude -

1 I'm talking here about southern Ontario - at about 18
2 days or something.

3 Q. So every 18 days --

4 A. Barring cloud cover. Now, I'm not
5 suggesting that every 18 days you go out and measure
6 the forest--

7 Q. That was my question.

8 A. --but the point is that the
9 opportunity is there to do the measurements as often as
10 proves expedient and I'm not going to give you a
11 specific 17-month or 13-month or six-month timetable
12 because I'm not in the position to give you that
13 information.

14 Q. Now, I had understood from your
15 evidence that in order to characterize the stand types,
16 your ecoelements, that it cannot be done strictly from
17 remote sensing information it requires ground truthing.

18 A. Yes.

19 Q. So there's going to be a requirement
20 for ground truthing?

21 A. That's so with the current system.

22 Q. I don't disagree with that, but I'm
23 going to this question of what information has to be
24 collected and what are the practical implications of
25 that.

1 Now, we have Landsat imagery or we have
2 spot imagery or whatever it is we want to choose from,
3 that will give us a coarse representation of what's on
4 the ground--

5 A. Yes.

6 Q. --but it won't allow us to go down to
7 the ecoelement level; will it?

8 A. Geographically it will.

9 Q. I'm sorry?

10 A. Geographically it will.

11 Q. Can you explain that for me, please?

12 A. I mean that the resolution of the
13 imagery is sufficiently fine that you could identify
14 ecoelements.

15 Q. But I thought your evidence was that
16 ecoelements cannot be determined strictly by overstorey
17 species but require a more fine level of analysis and
18 characterization. Is that not correct?

19 A. Yes, that is true and perhaps I
20 can -- I may be anticipating further questions, but
21 maybe I can sort of short circuit this.

22 MS. BLASTORAH: I'm sorry, Dr. Suffling,
23 could you speak up. We're having a bit of conflict
24 with the plumbing.

25 DR. SUFFLING: I'm sorry. Perhaps I can

1 hopefully shorten things down a little bit.

2 I would suspect that the way it will work
3 ultimately on the ground is that a lot of information,
4 most information will be collected using remote sensing
5 as is done presently, then for some sites, some
6 selected places more information will be collected -
7 this is part of that business of monitoring that we
8 mentioned - and then for a few sites or even for very
9 few sites, in some cases, there will be an awful lot of
10 information collected.

11 This in fact was one of the ideas that
12 came out of the ESSA symposium, the ESSA workshop, that
13 one would need some kind of - hierarchy may be the
14 wrong word because it will be confused with what we've
15 already talked about - some kind of continuum of levels
16 of information with some information about the whole of
17 the commercially managed timber estate in the province,
18 with more information about the selected samples, and a
19 lot of information about a few monitoring sites that
20 would tell you an awful lot about the health of the
21 management system as a whole.

22 MADAM CHAIR: Dr. Suffling, are you
23 saying that all the information that is now being
24 collected or proposed to be collected in the timber
25 management plan - and, if you recall, there are lots of

1 appendices and tables that tell you what's been done
2 over the last year or the past five years - that that
3 information isn't very helpful at all with respect to
4 this approach; in other words, for you to know that in
5 a specific area by stand so much was clearcut or so
6 much was modified cut or so much was planted--

7 DR. SUFFLING: Oh, that will be vital,
8 Ma'am, to know that; however, if it had already been
9 done, a lot of that information would emerge naturally
10 from looking at air photos or satellite imagery, one
11 would know very well.

12 MADAM CHAIR: So where does that
13 information, those statistics fit in with the remote
14 sensing business?

15 DR. SUFFLING: There are essentially two
16 kinds of statistics, there are projections about what
17 is intended, and there are statistics that have been
18 collected about what has already been done.

19 Many of the statistics that have been
20 collected about what has already being done or has
21 being done would be collected anyway for economic or
22 other reasons to do with the technicalities of wood
23 supply or what have you, so those data, to the extent
24 that they're spacial and even sometimes when they're
25 not spacial, can be incorporated in a GIS system and

1 they can be used along with the other information.

2 Some of them will be absolutely vital, and some will be
3 optional.

4 MADAM CHAIR: Okay, thank you.

5 Mr. Hanna, is this a good time for us to
6 have a break?

7 MR. HANNA: Certainly, Madam Chair.

8 MADAM CHAIR: Okay. We will be back in
9 20 minutes.

10 ---Recess at 10:30 a.m.

11 ---On resuming at 11:00 a.m.

12 MADAM CHAIR: Please be seated.

13 MR. HANNA: Q. Dr. Suffling and Dr.
14 Middleton, we left off talking about the need to define
15 the stand types in terms of their geography in order to
16 calculate these statistics, and I think we agreed that
17 you have to have the stand configuration and its
18 geographic location to be able to calculate the
19 statistics?

20 DR. MIDDLETON: A. That's correct.

21 DR. SUFFLING: A. Yes.

22 Q. And we talked about the need to
23 forecast the statistics into the future, and I think
24 your words were it's fuzzy when we get into a full
25 rotation but it's important to look at a full rotation

1 because of what Dr. Baskerville calls the cumulative
2 effects of these types of activities.

3 Now, in order to calculate the statistics
4 five years into the future, 20 years into the future,
5 or a hundred years into the future, one would need to
6 define the landscape mosaic at the stand level for each
7 one of those time intervals; is that correct?

8 A. Yes, generally. You might be able to
9 do some kind of aggregation to simplify it, but that
10 would be difficult.

11 Q. Now, we had been talking before the
12 break about the type of information needed to verify
13 the remote sensing data that is the feedback from the
14 system and you had indicated that much of the
15 information in terms of the geography could be
16 collected from air photos; correct, or satellite
17 imagery?

18 A. Much of the information is collected
19 at present from air photos at 1:10,000.

20 Q. Is it your view that you could apply
21 the landscape descriptions that you're proposing from
22 air photos, or is it going to require ground truthing?

23 A. All air photo systems, all satellite
24 imagery systems require some kind of ground truthing if
25 they're to be used effectively. That is already done

1 in fact for the FRI for instance.

2 That does not mean to say that, again
3 using the FRI as an example, that a technician has to
4 walk into every forest stand and have a look at it, if
5 that was the case.

6 Q. But it's not a simple task to take
7 the FRI and simply assign a FEC value to each stand; is
8 it?

9 A. To assign a what value?

10 Q. A forest -- sorry, a forest ecosystem
11 classification unit to each stand?

12 A. It's not a simple task, but I
13 understand from Richard Greenfield last summer that
14 some work is being done I think within the Ministry to
15 get to that end.

16 Q. He's a forester, I think his name is
17 Greenwood.

18 A. Sorry, Greenwood. I beg your pardon.

19 Q. Okay. So then in terms of the
20 calculations, we're going to have to do this on a
21 periodic basis, and let's say we have to do it -- well,
22 we would have to do it at least every year if there's a
23 timber management plan being prepared each year?

24 A. What is it exactly you're suggesting
25 has to be done every year?

1 Q. Okay. Timber management plans are
2 prepared on a five-year basis and reviewed on a
3 five-year basis.

4 A. Yes.

5 Q. Now, if we're looking at a timber
6 management plan being prepared in any particular year
7 and we're looking at approving that timber management
8 plan and we're going to use these constraints or these
9 criterion as a basis to decide as to the acceptability
10 of the timber management activities proposed, we will
11 need then some reference point to determine the
12 acceptability of the proposed activities in the timber
13 management plan; right?

14 A. Yes.

15 Q. So that means each year we have to
16 calculate the statistics.

17 A. It means that with respect to a
18 five-year plan you're going to have to have those
19 statistics on hand at the time of the preparation of
20 the next plan.

21 Q. All right. Now, have you done any
22 sort of just approximate estimate of the number of
23 calculations that would be involved in order to measure
24 whether these six criterion were being achieved?

25 Can you give us an order of magnitude;

1 are we talking, is it 10,000 calculations, is it--

2 A. Oh, I couldn't begin to tell you, but
3 I can give you one example. For the Shannon index
4 which is one -- that's an index of biodiversity.

5 Q. That's criterion 3 that you're
6 referring to now?

7 A. Yes. For the Shannon index we had
8 calculated this index for 16 subsections of base maps
9 and we did it for 10, 12, 15 base maps times 16, and
10 that was done with a hand calculator for a variety of
11 reasons, the student working on it was away from the
12 computer, and it was done very quickly. So there is no
13 problem with a hand calculator, it was a programmable
14 calculator.

15 Q. Okay.

16 A. Okay. Now, that's 16 base maps. I
17 know that isn't the province, but when you move into
18 even a machine like a 386 PC, you know, it can do
19 thousands of such calculations in seconds.

20 Q. I take it you then attempted to use
21 the Span systems to implement this type of approach?

22 A. No, I have not.

23 Q. Have you used the Span systems on
24 microcomputer?

25 A. No, I've not used the Span systems.

1 Q. So you have no idea how quickly it
2 actually does do calculations, how laborious GIS
3 calculations can be on a microcomputer?

4 A. No.

5 Q. Now, I just did a simple calculation
6 here, I just want to see if this is at all reasonable.
7 Would you accept that on average there might be 10,000
8 stands within an FMU? It certainly isn't going to be
9 an underestimate on average; would it be?

10 A. Well, I would have to think about
11 that. Let me say that I'm presuming that you worked
12 that figure out, so I would accept it as a given, all
13 right. I'm not saying it's true, but I would submit
14 it's reasonable.

15 Q. Do you have any reason to think it's
16 not reasonable?

17 A. Well, I am assuming that you're
18 acting in good faith, I assume it's reasonable.

19 Q. I picked what I thought was a
20 reasonable number, but I'm not the expert.

21 A. Okay. Let's not say it's the truth,
22 but let's say it's reasonable.

23 Q. All right. And let's just say if we
24 do these calculations on an annual basis over a 10-year
25 horizon to deal with the immediate plans and what's

1 immediately on the table.

2 A. Yes.

3 Q. So there's 10 calculations there, so
4 that's 10 times 10,000 times a hundred FMUs.

5 A. No, no, no. If you were estimating
6 the landscape diversity you would want to do this on
7 the basis of an FMU.

8 Q. Correct.

9 A. And to do that calculation for an FMU
10 there would be one diversity calculation.

11 Q. But in order to do that, one has to
12 go across all of the -- has to incorporate all the
13 stands in there.

14 A. You only have to...

15 Q. There's 10,000 data elements but
16 there isn't 10,000 calculations; is that your point?

17 A. In the case of the Shannon index you
18 merely have to know the portion of each forest type in
19 the FMU working at that scale.

20 Now, I have a data set at home from the
21 Lake St. Joseph management unit and it has 52,000
22 something and something and something stands in it and
23 assuming that you can -- you have a program that can
24 pigeon-hole those stands into different types, the
25 computer would have to churn away for a bit, but it can

1 add all those up and do the work.

2 Q. All right. And if we were looking at
3 the first criterion in terms of area, we would have to
4 do the calculation for each ecosystem type in the FMU;
5 correct?

6 A. Yes.

7 Q. And if we were doing the novel
8 calculation we would have to do it -- the novel typical
9 calculation for criterion 2, we would have to do it for
10 each novel type?

11 A. Yes. I should think that should be
12 quite simple too. If, for instance, you were looking
13 at hybrid poplar plantations, you would probably be
14 able to get that statistic straight away from the
15 district forester from the copy they had.

16 Q. Okay. And in terms of the criterion
17 4, the distribution of patch sizes, that would have to
18 be done for each type in the forest management unit?

19 A. Yes indeed, but again, assuming that
20 you could -- taking the existing data set which for
21 this purpose is a little crude but probably workable,
22 you could take the FRI data, assign each stand to a
23 particular type, and then having done that, having
24 recorded it in the database it could then be very
25 simple to graph these things out. Any spread sheet can

1 do that.

2 Q. Oh, I understand it can be done at
3 the forest management unit level, I want to see what's
4 involved here if we look at it from the provincial
5 level, okay. The point I think you've made is you
6 can't just look at it at the ecosection level, you have
7 to look at it across the whole province.

8 A. Yes.

9 Q. And in terms of separation distance,
10 that's again something that would have to be done at
11 each stand; is it?

12 A. That is a more difficult and a more
13 involved calculation, yes.

14 Q. And in terms of the patch size
15 calculation, that again has to be done on a landscape
16 unit basis?

17 A. Yes. Those two would certainly
18 involve GIS systems.

19 Q. Okay. So you'd have to produce these
20 calculations for an FMU and you may be involving 10,000
21 stands?

22 A. Conceivably, yes.

23 Q. You indicated there was 52,000 in the
24 Lake St. Joseph unit that you were--

25 A. But that's an enormous area. It

1 takes two hours to fly across it.

2 Q. And we have to do this for different
3 time intervals also; right?

4 A. Yes.

5 Q. And if we're going to do it over a
6 rotation of the forest, what would be a reasonable
7 number of time intervals that you would want to do
8 these calculations over?

9 I suspect you won't want to do it for
10 every year, you'll break it up?

11 A. I should think that you might be
12 doing something on an annual basis with subsamples and
13 I would doubt that you would want to do it for the
14 whole area completely.

15 I don't think you would want to look at
16 the whole of the area every year, you might look at
17 subsamples for particular purposes.

18 Q. But I'm looking into the future, how
19 far into the future we would project in any particular
20 time.

21 A. Oh, I see what you're getting at.
22 Yes. You might want to - and this is just a for
23 instance, all right, I'm not hung up on this - you
24 might want to look at every five-year interval for the
25 next 20 years and then maybe at 20-year intervals

1 thereafter.

2 Q. Okay. So that is in the order of
3 about 10 time intervals for a hundred year rotation?

4 A. Yes.

5 Q. All right. And you have indicated -
6 and I will be coming to this later - that we have to
7 look at three alternatives at the minimum, the no
8 timber management -- I forget what the other two are,
9 but there is a minimum of three alternatives?

10 A. Mm-hmm.

11 Q. So we also have to do the
12 calculations for three alternatives for each one of
13 those combinations I just talked about; correct?

14 A. Yes.

15 Q. Without going through all the math
16 right at the moment, we're talking in the millions and
17 potentially into maybe a billion calculations to do
18 that across the province. You're aware of that?

19 A. Ultimately, yes, you would be moving
20 into that kind of particularity. When you look at
21 modern data handling systems, that boggles the mind,
22 yes, sure it does, so does any computing system. The
23 capacity to handle these kinds of numbers is not out of
24 line.

25 MS. BLASTORAH: I'm sorry, Dr. Suffling,

1 could you speak up a little.

2 DR. SUFFLING: I'm sorry.

3 MS. BLASTORAH: Thank you.

4 DR. SUFFLING: I was merely making a
5 point that modern data processing systems are well able
6 to handle huge volumes of data like this.

7 We have with a - not with a 386 because
8 we're on conduit with the university - but with an
9 ancient eight-year old PC we have had 50,000 stands on
10 that and, believe me, it's like working with a creaky
11 old car compared to what is available now, as compared
12 to the sports car, and I'm talking PC not main frame.

13 MR. HANNA: Q. Have you attempted in any
14 way, even in a most protoctype of prototype ways to
15 explore what might be involved from a calculational
16 point of view in time to implement the approach that
17 you're proposing?

18 DR. SUFFLING: A. No, sir, I have not.

19 DR. MIDDLETON: A. Could I just jump in
20 here and remind the example that we used in previous
21 days of the Willamette Forest - I guess we've still got
22 maps here, that's not important - but they are the
23 alternatives to the - the alternative possible timber
24 management regimes were labeled up to alternative W or
25 something like that; that is to say, 20 or so for a

1 single unit done today quite different.

2 So on that scale the permutations
3 possible with the kind of system we're talking about
4 already in practice are such that that was not a
5 constraint on what they were doing.

6 Q. Sorry, I didn't understand the 20. I
7 think I missed a word there, Dr. Middleton.

8 A. Right here. Yes, we have alternative
9 W up here; that is to say, that you were mentioning
10 that we're saying at least three different futures.
11 Well, for this, the largest forest I understand in the
12 U.S., for a single plan, alternatives starting at A and
13 going up to at least alternative W, were handled with
14 existing technology, this kind of level today.

15 Q. That's for one, what would be in
16 crude terms, a forest management unit?

17 DR. SUFFLING: A. This is quite a big
18 area. There's 150, 200 kilometres long, north to
19 south, that's in miles.

20 DR. MIDDLETON: A. That's miles.

21 DR. SUFFLING: A. Those are miles.

22 Q. No, no. I was simply -- just in the
23 context though, that's one forest management unit. So
24 if I take what Dr. Middleton has told me, if we had W
25 alternatives for a hundred FMUs then that just

1 further -- I didn't incorporate that in my estimate in
2 terms of the number of calculations, but if we start
3 looking at the alternatives over a rotation of the
4 forest and we go to W alternatives, we're talking big
5 numbers.

6 DR. MIDDLETON: A. You're talking big
7 numbers, but the reason I raised it was that
8 computational limits are not clearly the limiting
9 factor, even with existing technology.

10 Q. But comprehension limits may be.

11 A. That's a different issue. They may
12 be.

13 DR. SUFFLING: A. Can I just return to
14 that for a second. The implication of the line of
15 questioning that you've addressed here is that even if
16 the technology is not available to do this work, or
17 that the time or money or logistics involved would be
18 absolutely mind boggling and it would defeat the
19 purpose of the exercise.

20 Now, I don't agree with you on that, I
21 don't agree with you because of the capabilities of
22 modern data handling equipment including GIS systems
23 but also standard computers. Most GIS runs on an
24 ordinary computer system with special screens.

25 Now, if for a moment we accept, purely

1 for the sake of argument not because I believe it to be
2 so, but if we accept the implications here that either
3 the equipment or the money or the personnel or whatever
4 would not be available --

5 Q. Dr. Suffling, maybe I should just
6 interrupt you there because that's not the implication
7 of my question.

8 MR. LINDGREN: Madam Chair --

9 MR. HANNA: Mr. Lindgren, let me finish.
10 I didn't even ask this witness a question. This is not
11 relevant to the question.

12 DR. SUFFLING: I was adding to Dr.
13 Middleton's.

14 MR. HANNA: I did not ask and I have not
15 meant in any way, Madam Chair, to imply - and I think
16 the Board is well aware that my client is advocating
17 the use of technology and massive data handling
18 technology of the sort that is being discussed - and
19 that is not the intent of my question at all and the
20 answer was not relevant to the question, and in that
21 way that's the only reason I interrupted the witness,
22 in the interest of time.

23 MR. LINDGREN: Madam Chair, it's a well
24 established practice in this hearing to allow witnesses
25 to complete their statements. I would ask Mr. Hanna to

1 extend that courtesy to Dr. Suffling.

2 MR. HANNA: Madam Chair, I certainly
3 have -- will do everything I can. I think my behaviour
4 in the past will show that I have done that, that I've
5 not interrupted witnesses unduly.

6 I'm looking in terms of time and I'm
7 looking in terms of a witness speculating on an
8 inference in a question that wasn't there, and I don't
9 really feel it's productive. But if the Board wants to
10 hear the answer, I don't mind, but I was just in the
11 interest of time trying to deal with something I didn't
12 feel was relevant.

13 MADAM CHAIR: Do you want to capsulize
14 what you were saying, Dr. Suffling?

15 DR. SUFFLING: Yes.

16 MADAM CHAIR: Your evidence so far is
17 that you don't believe that there are limits having to
18 do with using computers or other resources on your
19 proposal for measuring diversity.

20 DR. SUFFLING: That's the gist of it, but
21 there was one further point, Madam, that I would like
22 to make just to finish that off.

23 If one assumes that there were such
24 limits and that they were real and tangible, then there
25 is an alternative in a sampling strategy - and here we

1 would get into statistics and I would be a little bit
2 limited on this in terms of my own expertise - but
3 plainly there are strategies for subsampling when you
4 have enormous amounts of information. We have in fact
5 used this in our studies in northwestern Ontario. With
6 the sample that I mentioned there would be 3,000 stats.

7 There was a particular computation that
8 we needed to do that would in fact only incorporate 300
9 samples, and by using a long and involved statistical
10 method one of my graduate students was able to sample
11 and resample those 50,000 stands until he had a 300
12 stat sample that was representative of the whole and
13 then he proceeded with that.

14 Now, by analogy if there were limits to
15 what could be managed with available technology or
16 money, then these kinds of statistical procedures for
17 sorting, subsampling and stratifying data are available
18 and they are standard and they're widely used and
19 accepted.

20 So I don't see the approach that we're
21 advocating as being inherently technically limited.

22 MR. HANNA: Q. I would like to deal with
23 another topic and I have it under the heading of moving
24 targets, it's a subject we talked about briefly
25 yesterday.

1 And the first proposition I would put -
2 and perhaps Dr. Middleton I'll put this to you - is
3 that timber management activities are cumulative over
4 time, so that in developing a timber management plan
5 one must be concerned about the short and long-term
6 implications of management activities.

7 DR. MIDDLETON: A. I certainly agree.

8 Q. Is it not also fair to say that it's
9 only at the boundary conditions that these six criteria
10 will have an impact?

11 A. Can you clarify boundary conditions,
12 please?

13 Q. Yes. The boundary conditions are the
14 limits that you set in terms of maximum deviation.

15 A. No, I think this is more than a
16 nuance. I again would say that the central principle
17 here is the one enunciated by the Ministry, that to the
18 greatest extent possible the timber disturbance regime
19 mimic that of the natural disturbance regime for a
20 whole set of reasons that we've gone through and I
21 won't repeat here.

22 The limits that we have proposed are
23 outer boundaries, but certainly it would be my
24 understanding that the targets would be at zero change
25 with -- not at -- one would not target the outer

1 boundaries, that would be not in my understanding the
2 normal place for a plan to be aiming, those boundaries
3 would instead be the limits of our ability to get to
4 the central tendency of zero change.

5 Q. Yes, but my question was it's at the
6 boundaries that these terms and conditions, these
7 criteria become binding?

8 A. Well, they may become binding at the
9 boundaries, but long before the boundaries, the
10 boundaries also set the relative significance of any
11 given deviation from the central one.

12 Let me give you an example. If we said
13 that for an arbitrary criterion the goal was zero
14 change plus or minus 10 per cent as compared to one
15 where it was plus or minus 500 per cent, then for any
16 given deviation, say five per cent, it's not at either
17 boundary but it's significance would be very much
18 different in one case than in the other.

19 So I think there's information that can
20 be taken from those limits well before we're actually
21 at the limits. In technical terms it's setting the
22 variance then of the diversity and distribution and
23 that has an effect all through the distribution.

24 Q. But as I read these criterion they
25 provide not the single tendency as the objective, they

1 say the constraint that you have to operate within is
2 the variance.

3 A. I think they encapsulate both.

4 Q. Well, let's look at one then. Look
5 at criterion No. 1.

6 "No ecosystem type will be reduced to
7 less than 20 per cent of its original
8 area or increased to more than 500 per
9 cent of its original area."

10 A. Quite so.

11 Q. There's no statement there about a
12 central tendency; is there?

13 A. Oh yes, because this remember is the
14 technical appendix and the stated purpose - I can look
15 it up if you want to wait - but the stated purpose at
16 several points in the witness statement is the one that
17 I said earlier, that that zero change these -- I repeat
18 my earlier answer, that my understanding is that these
19 are defining the degree to which we can approach that
20 central tendency. I certainly would not want these to
21 be construed as goals in themselves.

22 Q. Dr. Middleton, you're aware that FFT
23 has submitted draft terms and conditions?

24 A. I am.

25 Q. And you're aware that the criterion

1 or some of the criterion that you've listed are
2 included in the draft terms and conditions especially
3 in 26 (i)(b)?

4 A. Yes, I am.

5 Q. And you're aware that if those terms
6 and conditions are adopted by this Board they become
7 legally binding?

8 A. Quite so.

9 Q. And you're aware that the terms and
10 conditions as set out here state the legally binding
11 limits within which you have to operate?

12 A. Yes.

13 Q. It does not say that the target is
14 zero deviation?

15 A. I don't think that those words come
16 up here. What we're proposing though is a procedure
17 for planning not a hoop to be jumped through but a
18 whole way of addressing the question, and clearly
19 central to that, as explained throughout - and I will
20 continue to try to clarify it - is the one that, again,
21 was enunciated by the Ministry originally, that sets
22 the whole ground work for thinking of the issue.

23 Now, I am not competent to say whether
24 the wording here is of appropriate legal form and so
25 on, but I can say that these terms and conditions were

1 taken directly from the witness statement, they're
2 taken in such a way that the logic of it flows from the
3 witness statements and the things that we have said,
4 and that certainly is the way that I understand them.

5 Q. All right. Now, you've indicated to
6 me the objective is that there be no deviation;
7 correct?

8 A. That's my understanding.

9 Q. And we had spoken yesterday about the
10 fact that for the time being you're using the existing
11 pattern as being the no deviation objective?

12 A. That's correct.

13 Q. But you're saying that existing
14 pattern may be modified at some point in the future in
15 terms of -- obviously the pattern is going to be
16 modified, but the actual objective may be modified at
17 some time in the future?

18 A. We may decide that the target will be
19 a different one in the future than it is now, yes.

20 Q. Now, given that timber management
21 activities are of the nature they are, that they are in
22 effect for a hundred years or more in terms of the
23 landscape, does it not cause you some concern to think
24 that we're looking now at setting a course of
25 activities based upon an objective and that objective

1 is going to be floating and it may have consequences in
2 terms of the stream of activities that are decided upon
3 at this point in time?

4 A. No, that doesn't concern me. A
5 couple of reasons that I'll put forward. First of all,
6 earlier this morning Dr. Suffling pointed out that the
7 farther in the future that we go with our projections,
8 to use his terms, the crystal ball gets cloudy, and I
9 think we'll all acknowledge that. What that means is
10 that we cannot in any way think that by setting
11 specific tasks based on our information today is going
12 to be adequate through the whole rotation.

13 I think we all recognize that as we go
14 along, as the future comes closer to the present, we
15 collect new information that makes the view less fuzzy
16 and that this will require adjustments to our
17 prescriptions for actual actions on the ground. This
18 in no way changes what the original target was, it just
19 says that our ability to implement it will get
20 increasingly greater.

21 Now, what this means is that
22 prescriptions for actual actions on the ground will
23 never be firm more than a short distance into the
24 future because that's as far as our reliable
25 information goes.

1 Following from that any extra information
2 such as historical information that caused us further
3 to change the target itself in practice will not be
4 adding anything new in the sense that the actions to
5 get there will have not been set -- will not have been
6 set more than some years in advance.

7 Now, this is not true for any time
8 interval. Obviously if I do a scientific study in June
9 I'm not going to expect cutting plans to be changed in
10 that July because we have new information, and this
11 gets back to the question of asking: At what interval
12 do we integrate this new information into our plan for
13 the future.

14 I don't have the answer for that but, as
15 I suggested yesterday, it would probably, in my view,
16 not be more frequently than the life of a five-year
17 plan, quite possibly much less than that even.

18 Q. Now, would you agree as a general
19 principle that it is preferred as much as possible to
20 maintain that objective constant?

21 A. Which objective, please?

22 Q. The objective in terms of your
23 landscape mosaic you're striving for.

24 A. No, not to the extent that means
25 freezing incomplete or obsolete information into our

1 view of that target.

2 Q. I said as much as possible.

3 A. Well, if you'll accept that, that is
4 within that label, I'll accept it.

5 Q. Now, as I understand it, you're also
6 proposing to update the criteria, the actual variance
7 limits periodically also?

8 A. Yes, that's a possibility.

9 Q. Now, how frequently do you expect to
10 update or when do you feel that the objective should be
11 updated in terms of the landscape mosaic objective?

12 A. I can't give a specific answer for
13 that, this is something which will depend on a number
14 of factors which I'm not an expert. One of them would
15 be the rate of change of our understanding of the
16 historical landscape, but a more important one would be
17 the set of things that we were discussing earlier today
18 about the details and the specific administrative
19 system used to put these things into place.

20 Both ours, and to even a greater extent
21 the ESSA document, stresses that one of the central
22 characteristics of the classification schemes and
23 research projects and so on is that they be practical
24 for all parties involved. This is part of the reality
25 of trying to do this, it's not just an academic

1 exercise.

2 Q. Now, what would the role of the
3 public be in reviewing those landscape objectives and
4 the deviation limits?

5 A. Okay. Public participation I think
6 we'll all agree is an important part here. I made a
7 distinction earlier between two parts of things in our
8 witness statement: One was the general procedure, very
9 basic principles such as how wildlife is defined to
10 include all living organisms, very basic things like
11 the need to keep track of the variety of spacial and
12 temporal scales; beyond that on a second level, we
13 would say so, would be things like the detailed
14 prescriptions, the 20 per cents and 500 per cents and
15 that sort of thing.

16 Now, in my view that second set is much
17 more open to negotiation than is the first step -- the
18 first set; that is to say, I would have great
19 difficulty with even the most open and public processes
20 saying: Well, we've decided we don't care if we have a
21 sustainable landscape, we're going to live for today.
22 Now, I might lose that one, but I would personally be
23 very unwilling to have that as a negotiable item unless
24 there was enormous pressure to do so.

25 At the other extreme of the things that

1 we put in here, something like a 20 per cent figure or
2 a 500 per cent figure, I would be very open to having
3 that adjusted with reasons of course, which I assume is
4 going to be part of this public participation
5 procedure. If, for example, a public meeting or
6 procedure was to say: Well, do you recognize that in
7 this place if you stuck by this this would have this
8 relatively serious local implication, whereas, if you
9 adjusted it to 450 instead of 500 we can avoid that, I
10 would adverse to say: Great, I see the logic of that,
11 let's make an adjustments.

12 And so just to sum that up, I think there
13 is a difference in different parts of what we suggested
14 but in principle all of them are open to public
15 consultation.

16 Q. So I'm not -- I don't want to deal
17 with the first level in terms of public consultation,
18 I'll accept what you said there, and I really want to
19 deal with the second group of issues.

20 Now, you had indicated that you might
21 want to say: We can go to 500 but if we go to 450
22 here's what the implications are. Similarly, you might
23 want to say: Here's the existing landscape mosaic
24 target that we have, here's what we think is another
25 landscape mosaic target that may be more appropriate.

1 Those are the types of things that you
2 would bring forward and want discussed publicly?

3 A. The latter one has a lot tied up
4 within it but in principle, yes, I can foresee a case
5 where somebody might say: Well, we now have this great
6 knowledge of what the pre-European landscape was but do
7 we really want to go in that direction, that would mean
8 moving all our cities or something like that, to take a
9 silly example.

10 I think there is some room for saying:
11 Well, yes, this also has to be practicable and, yes, if
12 those sorts of implications come up they are open to
13 discussion.

14 Q. So it would be responsible to say
15 here's a series of alternatives and here's what the
16 implications are in actual practice?

17 A. I think in practice it will normally
18 come down to a series of alternatives, that's correct,
19 as we have seen in this case.

20 Q. And saying: Here's what the
21 implications are if we use a plus 500 per cent and a
22 minus 20 per cent as opposed to a 40 per cent, 200 per
23 cent range?

24 A. Quite so.

25 MADAM CHAIR: Excuse me, Mr. Hanna.

1 ---Short recess

2 MADAM CHAIR: All right, Mr. Hanna.

3 MR. HANNA: Q. Now, Dr. Middleton, in
4 terms of the average citizen, not someone with the
5 technical qualifications of yourself, but the average
6 citizen who's interested in forest management, he hears
7 there's a public open house that's going to decide on
8 the deviation limits for the landscape ecology ranges
9 for different criterion, what type of information would
10 you present to the public in order for them to then
11 arrive at a reasonable decision in terms of shall we go
12 20 per cent or 40 per cent or whatever?

13 DR. MIDDLETON: A. I think visual things
14 like these kinds of maps would be one of the major
15 enabling tools to get that across. The analogy that
16 comes to mind is that this sort of public participation
17 is quite common with municipal matters which are often
18 also geographically based. That's certainly one of the
19 tools which works well there.

20 Nevertheless, I would certainly not want
21 to jump to the conclusion that all the technical
22 details be swept under the table. My experience with
23 public meetings and things like advisory committees and
24 so on is that those people that do come out and try to
25 get interested in them often have a very sophisticated

1 understanding of the issues. I'm not talking here
2 about the lobbyists and so on, but just genuinely
3 interested public citizens, if they're interested
4 enough to come out and seek the issues, will also
5 understand these concepts and we should give help for
6 doing that.

7 Now, clarify to me what your question is.
8 Are you asking what sort of -- at a public meeting how
9 I would proceed with my presentation, or is it a
10 broader question than that?

11 Q. No, it was very specific, it was the
12 former part of the alternatives I have available to me.
13 The question was very much of how would you -- what
14 would you convey to the public in order to assist them
15 in choosing whether the between stand diversity limit
16 should be 50 per cent or 30 per cent?

17 DR. SUFFLING: A. Could I expand on that
18 just a little bit, maybe -- perhaps it will be
19 sufficient to finish this response off.

20 In a public debate of this kind people
21 generally don't want to cope with detailed statistics,
22 they might be simple enough in themselves, but there is
23 sometimes a mental barrier against coping with the
24 figures because of education, attitudes or whatever.

25 So what you need to do is to say, for

1 instance, that diversity will be reduced by "x"
2 amount - let's take that as a case in point - or
3 increased by "x" amount, and what this means - then you
4 have to interpret - what it means is that this
5 particular kind of community, let's say mature jack
6 pine or sand plains is going to be reduced to such and
7 such an order.

8 What this further means is that it's
9 going to do this to snow-shoed hares or that to marten,
10 and then your trapper, your naturalist, the local
11 woodsman who goes logging every day has a very clear
12 handle on what's involved.

13 So you start off with the more obstruse
14 or abstract concepts and you work back in terms of
15 interpretation to examples of what that sort of thing
16 would mean.

17 Q. So you're probably aware that FFT in
18 other evidence that they've led here has been
19 advocating the use of cost/benefit analysis studies.

20 A. I wasn't aware of that, no.

21 Q. Could you anticipate using
22 cost/benefit analysis as ways to evaluate alternative
23 landscape deviation limits and objectives?

24 A. I have done something similar to that
25 in the study of trappers and the forest industry and we

1 were able to show on a landscape basis how the expected
2 yield - I'm not talking about population - the expected
3 yield of mixed furbearers would change in relation to
4 harvesting activity in a given trapper's trap line
5 area, and from this using historical average prices of
6 various kinds of pelts we were able to show how we
7 would expect their income to rise or fall under various
8 situations.

9 We didn't make any attempt to predict
10 what would happen to fur prices in future, so it was
11 crude from that point of view. But, yes, you can take
12 these data through to an economic level in certain
13 cases. I wouldn't advocate doing it for everything all
14 the time.

15 MR. MARTEL: Can I ask a question on
16 that, because we have had some information, I'm not
17 sure if it's adequate, on what happens to the trapper.
18 What happens, you've done a study, you indicate or
19 you've done some work on it, what happens to a trapper?

20 DR. SUFFLING: The short answer is that
21 we surveyed, I can't remember the exact number, but I
22 think it was 40 trappers and in every case where a trap
23 line was heavily logged or harvested the full-time
24 trappers went out of business and were replaced in some
25 cases by part-time -- you know, weekend part-time

1 trappers.

2 MADAM CHAIR: Do you know, Dr. Suffling,
3 if your study will become evidence at this hearing?

4 DR. SUFFLING: My study has been filed.

5 MR. LINDGREN: Madam Chair, it has been
6 filed as part of the interrogatory material.

7 MADAM CHAIR: Okay.

8 MR. LINDGREN: We have not filed it to
9 this point, it's just available as part of the sources
10 for the interrogatories.

11 MADAM CHAIR: Yes. It doesn't have an
12 exhibit number?

13 MR. LINDGREN: No.

14 MADAM CHAIR: I think the Board will
15 request that it be made an exhibit, unless there is any
16 objection from the parties.

17 MR. LINDGREN: Well, I've got a copy with
18 me, I can file it, Madam Chair.

19 MADAM CHAIR: Well, that's fine. We have
20 a copy, but I just want to give it a number.

21 MR. FREIDIN: I think, Madam Chair, if
22 that is now going to be evidence it is certainly
23 something which was not the subject matter of this
24 panel whatsoever, the effect of timber management on a
25 part of the environment, in this case trapping, I would

1 like to make it clear that I would like to reserve the
2 right to in fact review that evidence and it may very
3 well be impossible to have a meaningful
4 cross-examination on that issue with this panel now and
5 I might be requesting --

6 MADAM CHAIR: If we need to cross-examine
7 it, then we will have to arrange for Dr. Suffling to
8 come back. That's not anything to do with the subject
9 matter of this panel, it's just that we so rarely come
10 across data on trapping that I think we will identify
11 it here, and I'm sure we'll be getting questions in
12 other parts of the evidence.

13 MR. FREIDIN: All right. As long as it's
14 understood that that may be a possibility. Thank you
15 very much.

16 MADAM CHAIR: That will be Exhibit 1735.
17 Can you give us the reference, Mr.
18 Lindgren?

19 MR. LINDGREN: Pardon me, Madam Chair?

20 MADAM CHAIR: Could we have -- can you
21 describe that?

22 MR. LINDGREN: The full title of the
23 document is: Trappers and the Forestry Industry, The
24 Case of Northwestern Ontario, Final Report, and it's
25 dated 1980 and the authors are Dr. Suffling, Joseph Dal

1 Molin and Brian Smith and it was prepared for the Royal
2 Commission on the Northern Environment.

3 ---EXHIBIT NO. 1735: Document entitled: Trappers and
4 the Forestry Industry, The Case
5 of Northwestern Ontario, Final
Report, dated 1980 authored by
Suffling, Dal Molin and Smith.

6 MR. CASSIDY: I would adopt Mr. Freidin's
7 position, Madam Chair.

8 MADAM CHAIR: Thank you, Mr. Cassidy.

9 MS. SEABORN: What was the interrogatory
10 question number that it was in response to?

11 MADAM CHAIR: 1735. Oh, the
12 interrogatory question.

13 MS. SEABORN: No. I understand that the
14 report was produced as a result of an interrogatory
15 response that was posed during this panel.

16 MR. LINDGREN: I believe it was requested
17 by the Ontario Federation of Anglers & Hunters.

18 Yes, it's question No. 50. This document
19 was requested by the Ontario Federation of Anglers &
20 Hunters in their question No. 50 for this panel.

21 MADAM CHAIR: Thank you.

22 MR. HANNA: Q. Panel, I would like you
23 to just keep in the back of your mind, in one of your
24 empty memory banks, what we have just talked about in
25 terms of the public participation because I'm going to

1 be coming back to that in my questions. I now want to
2 deal with each of the eight criterion individually.

3 Now, looking first at criterion No. 1 on
4 page 64, ecosystem type refers to a stand for all
5 intents and purposes?

6 DR. SUFFLING: A. No.

7 Q. Okay.

8 MS. BLASTORAH: I'm sorry, I didn't hear
9 your answer.

10 DR. SUFFLING: I just said no.

11 MS. BLASTORAH: Thank you.

12 DR. SUFFLING: It's a kind of stand, not
13 a stand, a kind of stand or kind of patch, a kind of
14 ecosystem.

15 Let's put it in concrete terms. Using an
16 example from yesterday, if we were using the FEC type
17 of classification it might be V-38, black spruce bog
18 with leather leaf, was it, or whatever.

19 MR. HANNA: Q. The V-38 type, would that
20 encompass all successional stages or would successional
21 stages be different ecosystem types?

22 DR. SUFFLING: A. No, it would be a
23 recognized type independently of successional stages.

24 Now, if you were to take something like
25 mature white spruce with balsam fir and some aspen in

1 northwestern Ontario, which is the area I'm most
2 familiar with, that would invariably be an old
3 ecosystem type, it would not be early successional.

4 Q. I'm sorry, I'm lost.

5 A. Perhaps I can put...

6 Q. Why don't we stay with V-38.

7 A. Perhaps I can just put a diagram on
8 the overhead and maybe that would clarify it completely
9 a little better.

10 Q. Certainly.

11 A. If these were ecosystem types --

12 Q. Which corresponds to -- the V-38
13 would be one of those?

14 A. Yeah. So let's just put down V-38
15 here for the sake of argument, you could also look at
16 different successional stages if you wanted to.

17 Some of these types would always be found
18 soon after a disturbance, some would only be found a
19 long time after disturbance, they would be vegetation
20 associated with the end of the successional sequence.

21 The successional sequence might be
22 strictly linear, it might go straight down one of these
23 columns. That would be something like balsam, kinds of
24 black spruce that just -- I guess they would change a
25 little bit but they just get older and older without

1 very much species change. In most cases there would be
2 a movement from one type to another through time.

3 So the short answer to your question is
4 that an ecosystem type is a kind of ecosystem that may
5 be associated with late succession or early succession,
6 but the typing itself doesn't have any particular
7 implications, it just characterizes it.

8 DR. MIDDLETON: A. And if I could add to
9 remind everybody that it has been acknowledged that
10 none of our existing classification systems, including
11 FEC, is completely adequate for the purposes that we
12 propose at the moment, and one of the first tasks
13 proposed by the ESSA procedure is to get rid of those
14 deficiencies.

15 One of the major deficiencies of the FEC
16 system, aside from all its good strengths, is that the
17 place of time is still somewhat ambiguous in it.

18 MR. MARTEL: Is that the Marek stuff,
19 where Mr. Marek felt that we dealt primarily with, I
20 believe it's only after the cut and not what was there
21 previously.

22 MADAM CHAIR: Dr. Middleton, Mr. Marek
23 was previous evidence for Forests for Tomorrow and he
24 had some extensive evidence about the FEC system, and I
25 don't know if you've reviewed that or not.

1 DR. MIDDLETON: I've reviewed parts of it
2 but I can't say that I've seen it all. I would be
3 reluctant to try to answer your question, Mr. Martel.

4 MR. HANNA: Q. Dr. Middleton, just for
5 your information, the OFAH also is advocating that
6 there are successional elements added to the FEC
7 system, so there's no disagreement there.

8 DR. MIDDLETON: A. Okay.

9 Q. I have some problem though with what
10 you've described there, Dr. Suffling. It suggests to
11 me or maybe I'll -- let me start again. You indicated
12 that you may move laterally across the matrix.

13 DR. SUFFLING: A. That is just one
14 ecosystem type becoming another through time. Perhaps
15 it was an over complicated way of showing it, but ...

16 Q. Is it possible that that one
17 ecosystem type might choose a multiple number of
18 lateral movementd?

19 A. Yes.

20 Q. Or are you simply saying that, just
21 for illustrative purposes, that is the course but the
22 course may be a change in species composition over
23 time?

24 A. Well, individual species will be
25 changing -- the species themselves presumably are not

1 registering that they're part of an ecosystem, they're
2 just doing their thing when they go up or down in
3 numbers.

4 What we do is we -- what we have to do,
5 what we're obliged to do is to take all those species
6 and looking at them altogether to say: Well, what is
7 this sort of suit of organisms and structure, what does
8 it come down to. Okay, so black spruce bog, we type it
9 that way.

10 Now, a certain ecosystem type will move
11 from one stage to another. Perhaps initially the
12 poplars will colonize the area after logging, they zoom
13 away and it looks like a poplar stand for a number of
14 years, they're rather short lived, rather prone to
15 disease, and then ultimately white spruce or balsam fir
16 underneath begins to come through and the whole stand
17 starts to look more and more like a white spruce stand.
18 That's what we call succession typing.

19 So we have to, perhaps somewhat
20 arbitrarily, decide when it ceases to be a poplar stand
21 and when it starts to become, for instance, a white
22 spruce stand or a balsam/poplar stand.

23 Q. Dr. Suffling, I'm going to suggest to
24 you that you don't know what you're talking about, and
25 I say that --

1 MR. LINDGREN: Madam Chair, that's an
2 inappropriate question, it's an inappropriate statement
3 as well.

4 MR. HANNA: Q. I'm saying that, Dr.
5 Suffling, I'm saying it because I'm not saying with
6 disrespect but so we can start again.

7 DR. SUFFLING: A. I hope so.

8 Q. Because I think you are
9 misinterpreting how the FEC system works and I would
10 like you to look at Exhibit 1729, page 7.

11 A. What is 1729, please?

12 Q. Your overheads.

13 MS. BLASTORAH: What page was that?

14 MR. HANNA: Page 7.

15 DR. SUFFLING: This one. (indicating)

16 MR. HANNA: Q. Yes. Now, if you look in
17 the top left-hand corner--

18 A. Mm-hmm.

19 Q. --under each of the types, and V-38
20 is on the lefthand side, you will see a small graph;
21 correct?

22 A. Yes.

23 Q. And the vertical axis is dry to wet
24 and the horizontal axis is poor to rich?

25 A. Yes. So the implication is that

1 you've got a time sequence coming out of the ground
2 vertically.

3 Q. Fine. In terms of successional
4 states?

5 A. Yes.

6 Q. But the FEC types can be arrayed as a
7 function of moisture and nutrients; correct?

8 A. Yes.

9 Q. And those are generally independent
10 of success, those are adaptive factors that are
11 generally considered in ecology as being fixed;
12 correct?

13 A. Within limits, yes.

14 Q. So that when we look at a
15 successional state on a FEC V-38 as an example, we may
16 have a change in species composition, the vertical axis
17 that you drew coming out of the page?

18 A. Mm-hmm.

19 Q. But the FEC type itself maintains its
20 position ecologically speaking?

21 A. Yes, I see what you're driving at and
22 I can see your point entirely. The use of the FEC
23 category there on my diagram was inappropriate.

24 Q. Okay. So let's -- it isn't a major
25 point, but I just don't want to leave confusion in the

1 Board's mind.

2 A. I understand that. We were just
3 talking about ecosystem types initially. I had used an
4 FEC type perhaps unwisely there and you've pointed it
5 out and I can see that that's the case.

6 Q. Okay. So back to my question then
7 in terms of what constitutes an ecosystem type in
8 criteria No. 1.

9 A. Right.

10 Q. It might be V-38?

11 A. Mm-hmm.

12 Q. Might it also be some subcategory of
13 V-38--

14 A. Yeah.

15 Q. --reflecting a successional state of
16 V-38?

17 A. Yeah. In fact, as you've correctly
18 pointed out, that should have -- the graph could, if
19 the page were able to show it, could have a third axis
20 on it to make it into a cube and you could then slice
21 the cube horizontally so that the kind of site would be
22 shown on the page as it were, coming up out of the page
23 would be the time sequence, and then by slicing this
24 way you would have the change in vegetation over time.

25 Q. Okay. So the 20 per cent and 500 per

1 cent then would relate to the successional state
2 represented for each FEC within the forest management
3 unit or whatever ecosystem level we're dealing with;
4 that is how that would be interpreted?

5 A. I suspect we disagree on that.

6 Q. Okay.

7 A. But maybe we're just misunderstanding
8 each other.

9 Q. I want to understand what the 20 to
10 500 per cent variation applies to, physically on the
11 ground?

12 A. Okay. Let's just get away from the
13 FEC terminology because I'm not sure it's helping us at
14 this stage. I can't speak for the Board, but it may be
15 confusing.

16 Q. Well, you explain it the best way you
17 know and we'll see.

18 MADAM CHAIR: Excuse me. Mr. Lindgren,
19 do you want to make that an exhibit?

20 MR. LINDGREN: Certainly.

21 MADAM CHAIR: It's only that they've been
22 talking about that specifically and we don't have that
23 in here.

24 MR. LINDGREN: That's correct. And we'll
25 make hard copies over the lunch break.

1 DR. SUFFLING: Just as a point of
2 clarification, in the last little while we were really
3 talking about these small diagrams on the exhibit here.

4 MADAM CHAIR: Yes, but you referred back
5 several times to this overhead.

6 DR. SUFFLING: Yes, I have.

7 MADAM CHAIR: And we'll give it Exhibit
8 No. 1736, and it is an overhead of what? What would
9 you like to call it?

10 DR. SUFFLING: It's an overhead showing
11 vegetation or ecosystem types and successional change.

12 ---EXHIBIT NO. 1736: Overhead prepared by Dr. Suffling
13 depicting ecosystem types and
14 successional change.

15 MR. HANNA: Q. All right. Now, you were
16 going to explain how you interpreted ecosystem type or
17 how you intended ecosystem type to be interpreted in
18 criterion 1--

19 DR. SUFFLING: A. Okay.

20 Q. --as compared to what I was
21 describing in terms of V-38.

22 A. Okay. In terms of these criteria
23 here, at least criterion 1, a vegetation type would
24 just be a kind of ecosystem that could be recognized
25 consistently by its species composition and by its
structure. So that one might be looking at mature jack

1 pine with a height between such and such and such and
2 such and feather mosses in the understorey, perhaps
3 particular feather mosses or lichens and so on.

4 Q. But that sounds to me very much like
5 a successional stage of a FEC type?

6 A. Yes.

7 Q. So the 20 per cent variation -- 20 to
8 500 hundred per cent variation pertains to the
9 representation of successional state of a FEC type?

10 A. Of an ecosystem type.

11 Q. Of an ecosystem type, okay. Now, Mr.
12 Lindgren has filed some interrogatories and it includes
13 OFAH Interrogatory No. 40, that is Exhibit 1717A, and
14 Interrogatory No. 40 is on page 8.

15 A. Okay, I have it.

16 Q. And this interrogatory was asking
17 about the matter of age-class structure and how that
18 was captured in your criteria; correct?

19 A. Which part of the page are you
20 referring to?

21 Q. Question 40.

22 A. Yeah.

23 Q. The first subquestion under 40.

24 MR. LINDGREN: Perhaps for Mr. Hanna's
25 benefit I would point out that this question relates to

1 Dr. Middleton's evidence and it was Dr. Middleton who
2 prepared the answer.

3 MR. HANNA: I'm not limiting these
4 questions to any particular witness, anyone can respond
5 to it.

6 DR. SUFFLING: Well, I'll let Dr.
7 Middleton answer since he's probably most familiar with
8 the content.

9 MR. HANNA: Fine.

10 DR. MIDDLETON: Yes, I did write that.

11 MR. FREIDIN: Sorry, Mr. Hanna, could you
12 just repeat the question. Did it have anything to do
13 with age-class?

14 MR. HANNA: The question is written, Mr.
15 Freidin, there under sub (i) and that is:

16 "Please provide examples of explicit
17 goals for age-class structure in terms of
18 the geographic component."

19 Q. As I understand the discussion I have
20 just had with Dr. Suffling, the way that the age-class
21 component structure comes in is because the ecosystem
22 type as defined is the successional state of the FEC?

23 DR. MIDDLETON: A. Well, again, I would
24 leave out the FEC nomenclature because, as we have
25 explained, it will probably be a different system with

1 a different name, although the work that has been done
2 will be incorporated into it.

3 But as Dr. Suffling explained, yes, it
4 will be a recognizable thing. Perhaps the easiest way
5 would be to refer us back to these photographs and maps
6 that we have been looking at.

7 Q. This is Exhibit 1732?

8 A. 32 and 1724, and what we're talking
9 about here, both of us, is whatever unit could be a
10 colour class on one of these kinds of maps, although
11 you can't see them, they are things in this case like
12 spruce 1 to 20 years, spruce greater than 90 years,
13 jack pine 31 to 70, jack pine greater than 70, and so,
14 yes, the class as well.

15 Q. So it's species composition and age
16 component?

17 A. At least. There might be other
18 criteria which the final classification system also
19 includes such as drainage class or so on.

20 Q. Now, part 2 of this interrogatory
21 asked the basis for deriving these variance limits.

22 A. Mm-hmm.

23 Q. And you indicated that the 20 and the
24 500 are simply inverts, one of the other?

25 A. That's correct.

1 Q. And you said that the factor of five
2 is based on the logic that more than one tenth of the
3 landscape is needed for an adequate system of parks and
4 reserves?

5 A. That's correct.

6 Q. So if the 20 to 500 per cent
7 criterion is adopted that would ensure then that the 12
8 per cent type objective set out by the world
9 conservation strategy and elsewhere would be achieved?

10 A. No. No, not directly. The 12 per
11 cent criterion for system of parks and reserves is --
12 has also to do with permitted lands uses within those
13 areas.

14 This criterion is not for setting aside
15 parks and reserves, this is for a component of the
16 landscape, a dynamic component, and this criterion of
17 20 per cent to 500 per cent is not saying that 20 per
18 cent is -- it's not saying that "x" number of
19 geographical locations on the ground shall henceforth
20 and forever remain in this class, this colour on the
21 map, but rather that over the assemblage of the map
22 there will be between 20 and 500 per cent of that
23 colour no matter what we do to it in terms of TMA.

24 The logic that brings parks and this
25 criterion together in the first place is that starting

1 to look for basic ways of setting orders of magnitude
2 for what would be appropriate deviation away from zero
3 change.

4 I took the logic that if we imagine we
5 have a complete park system it might be said: Well,
6 that's 10, 12 per cent of these classes dealt with. We
7 know that that, from the other logic, the iceberg logic
8 we know that that's not adequate in itself so we would
9 want to go, again in orders of magnitude, let's go to
10 double that, to 20 per cent, and then we would have the
11 bottom limit for what might be considered acceptable.

12 Using the idea that part of this
13 criterion will be dealt with with what happens inside
14 parks and reserves, we know that some of its use will
15 be outside of those boundaries.

16 Q. So if we need 12 per cent in parks
17 and reserves you're saying we need approximately a
18 comparable proportion in the current ecosystem types?

19 A. I'm not sure I get the logic. If I
20 understand, whatever is in parks and reserves, you
21 know, if there's a park in this geographical area, that
22 certainly enters into our calculation, that is part of
23 the land base for which we derive our totals for each
24 ecosystem class and so on and that will -- whatever is
25 in parks and reserves will do part of the job, the rest

1 of the part of the job will have to be done in the open
2 landscape.

3 The way those two parts deal with the
4 problem will be somewhat different in that within the
5 parks and reserves there will be a greater tendency for
6 individual geographic locations to be more constant
7 through time, whereas in the rest of the landscape
8 there will, I expect, be much greater geographical flux
9 on where these coloured bits are. The constraints is
10 what totals out of both categories.

11 DR. SUFFLING: A. There's one exception
12 to that, Dr. Middleton, and that's where you have a
13 very, very large park like -- there probably aren't any
14 in Ontario that qualify - like wood buffalo, where
15 you're going to allow a fire regime within the park
16 which is much greater frequency of fire than outside.

17 DR. MIDDLETON: A. Quite so. I accept
18 that entirely.

19 MADAM CHAIR: Mr. Hanna, can we break for
20 lunch now and the Board would like to come back, we
21 have some interest in this question.

22 MR. HANNA: Madam Chair, I had indicated
23 yesterday that I had hoped that I was going to be more
24 brief. I haven't been pressing as quickly as I hoped,
25 so I will definitely be the remainder of the day and I

1 may carry over to tomorrow some time.

2 MADAM CHAIR: Let's see how we do this
3 afternoon.

4 ---Luncheon recess at 12:10 p.m.

5 ---On resuming at 1:30 p.m.

6 MADAM CHAIR: Please be seated.

7 MR. HANNA: Madam Chair, you had
8 indicated you wanted to ask some questions. I'm going
9 to pursue that subject, but I'm quite happy to have the
10 Board --

11 MADAM CHAIR: Go ahead, Mr. Hanna. The
12 Board simply wanted to know with respect to increasing
13 the size of our parks and reserves to 12 per cent
14 whether we were talking about adding on to existing
15 reserves and parks, or whether we were talking about
16 getting representation of all possible ecosystems that
17 are identified.

18 DR. MIDDLETON: All of those elements
19 might be involved. I would certainly start from what
20 we have now, that would be my logic.

21 I'm not sure about the Ontario park
22 system, certainly for the federal park system one of
23 the stated aims is to have representatives of all the
24 ecosystem types or wording to that effect, so that
25 would also be a goal which probably parks plans would

1 look at if proposing new ones to be set up.

2 I would stress though that this issue
3 about what constitutes an adequate park system overlaps
4 with what is quite distinct from the related one about
5 the kind of criteria that Mr. Hanna and I have been
6 talking about earlier this morning.

7 MR. MARTEL: How do reserves around AOCs
8 and lakes and so on, how do they fit into this
9 equation?

10 DR. MIDDLETON: Anything that's on the
11 landscape, anything that would show up in that kind of
12 satellite photograph, for example, or any technology
13 would be part of the equation. For getting the
14 proportions of areas, coverage classes and all of those
15 sorts of things, that would include all elements of the
16 landscape.

17 MR. MARTEL: What designation do they fit
18 in though? I mean, if you're looking for 12 per cent
19 park, let's say you have an AOC and around it, it's a
20 significantly large one or it might be a whole area
21 where you've got a rookery or something like that, how
22 does that fit in; is that part of the 12 per cent
23 you're talking about or is it...

24 DR. MIDDLETON: I think not. Can you
25 explain an AOC to me, I'm sorry.

1 MR. MARTEL: An area of concern.

2 DR. MIDDLETON: Okay. It would depend on
3 the status of it. I think the bottom line for the 12
4 per cent park criterion is that parks have some sort of
5 assured constancy through time.

6 Now that, as I said a few days ago,
7 that's not necessarily by Gazetting it the way we do
8 now. There might be alternative mechanisms for setting
9 something up with equivalent protection through time,
10 but it would have to have some assured status of that
11 sort.

12 So if I understand it, that's like leaves
13 around lakes or areas of concern would not show up in
14 my understanding under the park's 12 per cent, although
15 it would of course show up under these other criteria
16 for the broader landscape.

17 MR. MARTEL: And you could in fact take
18 out of production well more than 12 per cent of the
19 land base?

20 DR. MIDDLETON: Not take out of
21 production. I have to be careful again with things
22 like leave strips along lakes and so on, just because
23 I'm not conversant with all the details of what they're
24 given as protection.

25 Our criteria for having a given amount of

1 yellow blocks on the map being maintained for landscape
2 does not mean in the first instance that any one of
3 them is taken out of production, it means only that if
4 you do something, if you clear this one for example,
5 there are provisions over the regeneration in other
6 places that another one was regenerated such that the
7 total remains constant through time, not any individual
8 plot of land but the total.

9 It's only when you get within the parks
10 and reserves part of it proper that we have the extra
11 constraint that geographical places are not subject
12 that they are out of production.

13 As for the ones that you've mentioned
14 like things around lakes and so on, I don't know
15 currently what their status would be. If they really
16 were permanently out of production, I see no problem
17 having those counted or given the status of parks and
18 reserves.

19 MR. MARTEL: Yes, because they're on a
20 cold water lake they're permanently taken out if it's a
21 trout lake I guess, the trout -- yes, they're out, that
22 reserve, because there's an automatic reserve around
23 those lakes.

24 DR. MIDDLETON: If it's currently out of
25 production like that, then I think it would be a

1 candidate for being incorporated into this larger
2 expanded system of parks and reserves that we're
3 talking about, though keeping in mind that there are
4 other criteria for setting up a park system as well,
5 area is just one of them.

6 MR. HANNA: Q. Now, can we look again at
7 the Interrogatory No. 40 and your response to the
8 second part of the interrogatory regarding the
9 quantitative basis for the limits that you've set.

10 AS I understand your answer, you're
11 saying that slightly over -- that more than 10 per cent
12 is required for an adequate system of parks and
13 reserves and you've basically doubled that?

14 DR. MIDDLETON: A. To get the criterion,
15 that's correct.

16 Q. Now, have you attempted to test this
17 particular criterion for a representative group of
18 ecological land types to see what the limits imply in
19 operational terms?

20 A. If have I tried to implement this in
21 a particular place; no, certainly not.

22 Q. Now, you'll remember that I asked you
23 to put in your memory bank before lunch the discussion
24 we had about public consultation. I would like to come
25 back to that or some of the issues we talked about

1 there, and I believe we agreed that in having the
2 public review these criteria that we should present
3 alternatives, we should present the implications of
4 those alternatives in meaningful terms and a variety of
5 other things which I'll deal with.

6 Now, I want to know in terms of this
7 particular criterion, criterion No. 1, the 20 per cent
8 and the 500 per cent, what alternative deviation limits
9 you considered?

10 A. That I considered?

11 Q. Well, or Dr. Suffling. I presume
12 this is a joint effort, I'm interested in hearing what
13 ones were considered by whoever?

14 A. Well, we can speak for ourselves I
15 think here. In my own case I didn't sit down
16 explicitly and say: Well, let's think of 20 per cent
17 and then let's compare that against 30 per cent and so
18 on, what I was trying to do - as I hope I've made
19 clear - was start a process of iteration, something to
20 get us talking about these issues from today on which
21 research programs will build their understanding as we
22 go along.

23 I don't -- I didn't spend -- I did not go
24 through a process of the kind that we were talking
25 about if we were going to be presenting actual plans to

1 the public of developing plan A, plan B, plan C and so
2 on.

3 Q. So is it fair for me to presume then
4 from what you've said that you would not advocate these
5 limits, these deviation limits being implemented until
6 such alternatives were evaluated and the research you
7 referred to has been completed?

8 A. I'm sorry, I think I missed one of
9 the negatives in there. Could you clarify the
10 question?

11 Q. Would you -- is it fair to say from
12 what you've just said then that you would not advocate
13 implementing these deviation limits at the present time
14 until such alternative analysis were undertaken and the
15 research you referred to have been completed?

16 A. No, quite the contrary. These are
17 put here precisely because we need something to get us
18 started for this kind of system. The option of having
19 no quantitative guidelines at all until we have very
20 good and refined ones is not an option at all.

21 In my case, if I may make reference to
22 diagram that Dr. Suffling has prepared, if we just take
23 two of our criteria together like the -- in this one
24 patch size and diversity of something, as I've tried to
25 stress, our conceptual goal is no change from some

1 existing set of these things, the existing landscape.
2 We recognize that our state of being able to quantify
3 and really tie down these things is at an early stage
4 and our response has been to say: Well recognizing
5 that, we're going to have to have very broad limits
6 indeed about what will count as zero or equivalent to
7 it.

8 My understanding is that we have set
9 enormously broad ones, factors of five, and that as we
10 clarify and get better research and understanding of
11 the process at work out there, both the administrative
12 ones and others, that we will be able to become much
13 more precise about these and it will change -- maybe it
14 will be squished this way and perhaps even longated in
15 others, though I would be surprised at that one.

16 So my idea is that as extra things come
17 up we will clarify these by pulling in the boundaries
18 of what we understand to be acceptable.

19 Q. But are you not violating what we
20 agreed was responsible approach to this in terms of
21 evaluating alternatives and reaching a decision?

22 A. I don't think so, because you'll
23 recall that I tried to phrase that in a sense that
24 there are certain basic elements of the approach which
25 we consider to be rather -- a might considerably firmer

1 in our view than details of implementation and really
2 it's a continuum again.

3 If I take it what you're saying to be
4 something like this, that perhaps a thousand per cent
5 rather than 500 per cent would be a better decision, my
6 answer would be eventually we get to a place where we
7 have loosened goals so severely that there's nothing
8 left of the central principle.

9 The logic that we've been going through
10 that I've been trying to explain in relation to the
11 park goal, for example, is of this sort. We're saying:
12 Well, we've got this bit about parks a little bit
13 better tied down than we have for some other things,
14 and we have some basic principles about the relative
15 importance of park systems compared to other things,
16 meaning the other things must do a larger part of the
17 job.

18 That means that we can be pretty sure in
19 saying that 20 per cent is -- we can't go much beyond
20 that. Maybe eventually we'll be able to make that a
21 much narrower area of variation around it, and that's
22 where the combination of other consultation and extra
23 information will allow us to make those decisions.

24 Q. But in coming forward with your
25 recommendations you haven't looked at the advantages

1 and disadvantages of a limit of, say, 40 to 200 per
2 cent or 80 to a hundred per cent, you haven't
3 investigated that and said that's reasonable or it
4 isn't reasonable, this is the preferred one based upon
5 looking at the range of alternatives that we might
6 consider?

7 A. I considered it in the sense of
8 asking myself what I could reasonably put down as
9 bounds for now.

10 Sure, I considered the possibility of
11 putting much stricter bounds on it and if we were in an
12 ideal world where there weren't lots of other factors
13 in play, if I were doing some modeling for example with
14 no implications in terms of money and so on, I probably
15 would have started with something much, much narrower
16 in this diagram than what we did.

17 I came down to these taking quite overtly
18 the view that we want to be -- we're going to start
19 pretty conservative in this process and tighten it up
20 only as the information justifies.

21 DR. SUFFLING: A. By conservative you
22 meant fairly relaxed in terms of industry?

23 DR. MIDDLETON: A. Very relaxed
24 constraints, yes.

25 MR. MARTEL: I'm not sure industry would

1 look at the size of those in that light.

2 DR. SUFFLING: Well, Mr. Martel,
3 basically any change that might occur in this direction
4 of taking acknowledgement of conservation issues will
5 be a tightening up from industry's standpoint, but the
6 question is whether it's a slight tightening or a
7 sudden severe tightening.

8 MR. HANNA: Q. Can we look at criterion
9 No. 2. And the matter of novel landscape unit was also
10 a subject of the No. 40 interrogatory by the OFAH, and
11 it appears to me that there is not a definitive
12 statement as to what would constitute a novel
13 landscape.

14 Some examples are given, but it isn't
15 clearcut, this is a novel landscape, that isn't a novel
16 landscape. There isn't an operative decision; is
17 there?

18 DR. MIDDLETON: A. That's correct,
19 because that decision requires the previous decisions
20 about the form of the landscape classification system.
21 It is only in the context of that developed system that
22 the final definition of a novel thing, a novel unit
23 comes to be.

24 In practical terms it's only after we
25 have decided whether we are using 10, 15 or 300 colours

1 on that map that we can determine what is within our
2 crayon box and what's the new ones we haven't seen
3 before.

4 Q. So the implications of the
5 constraints that you've included in criteria No. 2 will
6 not be evident until that definition has been
7 clarified?

8 A. That's correct.

9 MR. HANNA: Madam Chair, did you want to
10 mark that as an exhibit. I don't know -- I'm really
11 easy on it, whichever you...

12 MR. LINDGREN: I believe some effort went
13 into it, so perhaps we should mark it as Exhibit 1737.
14 We will make hard copies at the break.

15 MADAM CHAIR: Thank you. Could you
16 describe that, please?

17 MR. LINDGREN: Dr. Suffling, could you
18 describe it?

19 DR. SUFFLING: It's an overhead of a
20 conceptual model of how the landscape would vary
21 through time with respect to the criteria in Appendix 2
22 of our witness statement, which is No. 8.

23 ---EXHIBIT NO. 1737: Overhead of conceptual model of
24 how landscape would vary over
25 time re: Criteria No. 8 in
Appendix 2.

1 MR. HANNA: Q. Now, I would like to know
2 the rationale for setting the 10 and 30 per cent limits
3 for this criteria?

4 DR. MIDDLETON: A. I'm sorry, the 30 per
5 cent limit?

6 Q. Yes, there's a 10 per cent and a 30
7 per cent limit; 30 per cent limit at the ecosection
8 level and 10 per cent at the ecoregion level?

9 A. I beg your pardon. Could you just
10 indulge me for a moment.

11 DR. SUFFLING: A. Okay. The rationale
12 in terms of different percentages is that as you go up
13 to a regional level then the introduction of novel
14 landscapes as a percentage of the area would be more --
15 have more consequence for a given percentage.

16 If you had 10 per cent of a region that
17 was, let's say for the sake of argument, in hybrid
18 poplar plantations, then at a lower level, at a
19 district level or a section level or something like
20 that, then the percentage in certain cases would be a
21 lot higher than 10 per cent because the distribution
22 would not be even through the landscape. That's why
23 they're two percentages different.

24 Q. Now, why did you select 10 per cent
25 and 30 per cent?

1 A. These again, as with No. 1, represent
2 a best professional guess at a very, very early stage
3 or initial stage of iteration. We don't pretend that
4 these would be final figures or even necessarily
5 desirable figures, they are -- it's flying a kite and
6 saying: Well, if somebody else can come up with a
7 better viewpoint on this issue, then obviously we would
8 be prepared to listen and look at evidence.

9 If we were to pretend otherwise, I think
10 would be misleading.

11 Q. To the best of your knowledge, have
12 similar types of limits been established in other
13 jurisdictions using a similar system to what you
14 propose?

15 DR. MIDDLETON: A. Not to my knowledge.

16 Q. Dr. Suffling?

17 DR. SUFFLING: A. I don't know of a
18 system in forestry, but there are attempts I believe in
19 Britain in certain particular agricultural regions
20 which have conservation value, like parts of the
21 Northfolk Broads and the subset levels to try to limit
22 the expansion of certain kinds of land use activity and
23 to try and prevent the contraction of other traditional
24 uses.

25 MR. MARTEL: Is it the name that's

1 frightening here, I mean, the idea? I mean, you say
2 it's novel and you're having difficulty defining what
3 novel is, and then you say but there are examples of
4 certainly agricultural land, I think you said,
5 conservation land in England. What's novel really
6 trying to get at?

7 DR. SUFFLING: Okay. What we're really
8 trying to reach here with this statement is, first of
9 all, to consider kinds of ecosystem type that might be
10 introduced to the landscape imminently. These would
11 include, just for the sake of an example, a hybrid
12 poplar plantations, all right, that's a fairly
13 realistic one.

14 Now, in the future, with intensification
15 of forestry and with development of further technology
16 it's quite conceivable, indeed it's likely, that people
17 might want to start planting large quantities of hybrid
18 genetic stock or totally exotic species. This is
19 widely done in other regions of the world and this is
20 no reason to suspect that it wouldn't necessarily be
21 done in northern Ontario.

22 Where it is done as, for instance, in
23 parts of New Zealand, Great Britain, Norway, Japan,
24 it's done where there's very intensive forestry going
25 on. So as we see the forestry activities intensified,

1 we will see probably moves towards introducing totally
2 exotic kinds of ecosystems.

3 There's nothing wrong with that in
4 itself, indeed it may -- by intensifying forestry in
5 some areas it may take pressure off other areas in an
6 ecological sense, but obviously such activities would
7 be clustered for ecological reasons because of soils
8 and because of the economics of having them near mills;
9 so we can expect the effects to be more or less
10 non-existent in some areas and then very profound in
11 others.

12 MR. HANNA: Q. Now, Dr. Middleton, I
13 believe you had indicated that you expect to have these
14 values for each of the criteria refined through the
15 other wildlife research program?

16 DR. MIDDLETON: A. Or the research
17 projects that come out of that program.

18 Q. That's what it is referring to, yes.

19 A. Mm-hmm.

20 Q. Now, what type of ecological research
21 is proposed in the draft work program, Exhibit 1714, or
22 would you propose to test the appropriateness of the 10
23 and 30 per cent criteria?

24 A. My analysis of this would start by
25 going back to the reason it came in the first place,

1 the logic here is again, first, we're concerned for all
2 species that we have out there; second, that we don't
3 know species specific data for a great majority of them
4 nor can, our operating position is that the best that
5 we can do is make sure that we maintain habitat for
6 everything, we don't inadvertently change the landscape
7 in such a way that we eliminate habitat for any of our
8 species.

9 That is why we keep tying everything back
10 to the existing landscape or ultimately the
11 pre-European landscape, because that is the landscape
12 which has provided habitat for the last "x" thousands
13 of years for all our native species.

14 If we're going to make changes from that,
15 it would have to be with full knowledge, which we don't
16 have, of what those consequences would be; therefore,
17 my way of going at this would be to get the ecological
18 land classification system first, to tie that with a
19 research program on monitoring of different groups of
20 species either through a collection of historical
21 records or whatever to see what -- to look, first of
22 all, for changes in species, different kinds of species
23 status in relationship to different kinds of landscape
24 changes.

25 For example, we might want to look in a

1 number of areas which differ in the percentage of their
2 area covered by human imposed landscape elements, it
3 might be cities for that matter, and see if that has a
4 measurable effect or not that we can detect in any
5 groups of species. That would be a way of starting
6 this type of research program.

7 I wouldn't want to say that is the only
8 way, that's the one that comes to my attention first.

9 Q. So if I understand what you're
10 saying, you want to take an ecoregion where there was
11 various proportions of the region in novel landscape
12 types and determine what the feature -- what the
13 response was of certain species?

14 A. It would be a little bit more precise
15 than that. Let me see if I can give you an example.
16 I'm unfortunately not from the area of the undertaking.
17 I have looked at a student who has looked at bird
18 distributions in the Niagara peninsula because the
19 Ontario Breeding Bird Atlas provides a very good data
20 set which is there to be looked into.

21 Now, what this student, Mr. Cowan found
22 was that there are whole collections of species which
23 seem not to occur anywhere in the peninsula despite the
24 fact that there are patches of habitat remaining there
25 which meet all the published requirements for its

1 breeding and feeding and so on, and his and my
2 conclusion from our analysis was that it was the great
3 expanse of agricultural land, a novel element in our
4 peninsula, which is now at the level of 70 and 80 per
5 cent, which has simply made this whole area of many
6 hundreds of square kilometres unsuitable habitat for
7 these species.

8 Now, there's nothing special about the
9 birds here except the fact that we had an existing
10 database that allowed us to look at this relatively
11 painlessly.

12 That's the sort of information that I
13 would look to in other parts of the world, other groups
14 of species, setting up such projects if necessary to
15 begin to determine what if any thresholds there are for
16 a place where a new element is intrusive in the
17 population dynamics of groups of species.

18 Q. So given what you just told me,
19 you've indicated that on the Niagara peninsula where
20 there's 70 or 80 per cent novel types you're starting
21 to see impacts on species and that's the only case you
22 can think of that would provide some sort of benchmark
23 against which to evaluate the reasonableness of the 10
24 and 30 per cent that you propose?

25 A. No, it's the first example that came

1 to mind.

2 Q. Okay. Tell me the examples that you
3 used or the considerations you used to come up with the
4 10 and 30 per cent?

5 DR. SUFFLING: A. As with the first
6 criterion here, this was a first cut problem. If you
7 go to somebody with some experience in a given area,
8 whether they're a doctor or nurse or motor mechanic,
9 whatever, and you ask them to give you an idea of what
10 you think is going on and what will be a reasonable
11 standard for something, they can usually come up with a
12 reasonable guess. Now, they might be right and they
13 might be wrong. That is basically what we have done
14 here.

15 Now, the reasoning behind this derives
16 from cases like, for instance, the disappearance of
17 heathland in the U.K. in response to planting lodgepole
18 pine, Douglas fir, or the tendency to disappearance of
19 certain particular kinds of blanket bogs in western
20 Norway where they've planted lodgepole pine, and just
21 looking at, you know, professional lifetimes'
22 experience of seeing various things that my gut feeling
23 was that these percentages would be reasonable ones to
24 start with.

25 I'm not fixated on them, if somebody can

1 come up with a better rule that's just fine with me.

2 Ultimately you have to start somewhere.

3 Q. Can we look at Forests for Tomorrow's
4 terms and conditions, term and condition 26(i)(b), sub
5 (3), and I believe that this term and condition deals
6 with the same matter as criterion 2.

7 DR. MIDDLETON: A. That's correct.

8 Q. Now, this term and condition
9 indicates that the 10 per cent value applies at the
10 ecodistrict or ecosection level, and I see your report
11 says that it should be 30 per cent at the ecosection
12 level and 10 per cent at the ecoregion level.

13 A. Yes, that's quite right. That is a
14 discrepancy between the two. The 30 per cent line is a
15 relaxation of that, of course, allowing greater scope
16 for change at the smaller -- larger scale looking at
17 smaller units on the landscape.

18 Q. Which represents your best judgment
19 at the present time?

20 A. Well, I suppose the ones in the terms
21 and conditions which is -- the firmer one is the
22 official answer here.

23 Q. I'm sorry, I didn't -- the firmer one
24 is the official answer?

25 A. Well, you can instruct me on relative

1 status of these things.

2 Q. No, I'm asking you for your
3 professional opinion. You aren't here as Forests for
4 Tomorrow's spokesman, that's Mr. Lindgren's job, you're
5 here as a professional expert.

6 MR. LINDGREN: Madam Chair--

7 MR. HANNA: And I want to get your
8 professional opinion.

9 MR. LINDGREN: --this paragraph was
10 submitted by Forests for Tomorrow, let's make that
11 clear much clear.

12 MR. HANNA: That's fine, I'm well aware
13 of that.

14 Q. I want your professional opinion as
15 to what you feel is the most appropriate criterion?

16 DR. MIDDLETON: A. I'd probably go with
17 the 10 per cent in both cases and the 30 per cent,
18 which is the relaxation of that, would be on grounds of
19 making it easier to implement in smaller areas. I'll
20 ask Roger to comment as well.

21 DR. SUFFLING: A. That was in fact how
22 the discrepancy arose. I mean, it should not be there,
23 but initially there was a 10 per cent rule, and then in
24 discussion I had pointed out that the fluctuations were
25 likely to be -- quite appropriately, likely to be much

1 larger in smaller units of land than in large ones, and
2 in fact if one didn't -- if one didn't allow that
3 flexibility at a local level what you would end up
4 doing would be tending to scatter these novel systems
5 throughout the landscape which would not necessarily be
6 as benign ecologically nor would it necessarily be as
7 good for the forester from a logistic planning point of
8 view.

9 Q. So if I understand your opinion, it's
10 you would want to see the 30 per cent at the ecosection
11 level and the 10 per cent at the ecoregion level?

12 A. That is correct, as a starting point.

13 Q. And you aren't of that opinion, Dr.
14 Middleton?

15 DR. MIDDLETON: A. I would be quite
16 happy to accept that logic.

17 As Dr. Suffling pointed out, this is an
18 example of how later discussion and thoughts on the
19 thing can lead to refinement of the figures that go
20 into it.

21 Q. Okay.

22 Can we look at criterion 3, please. Now,
23 I provided to you some excerpts from a standard ecology
24 textbook and I'm sure it's nothing new to you
25 gentlemen. I would like to discuss that with you now,

1 if I could.

2 A. Yes.

3 MR. HANNA: Madam Chair, it's an excerpt
4 from -- I believe I actually had excerpts from this
5 book before, it may be an earlier version of it, by
6 Eugene Odem, Fundamentals of Ecology and it's one page
7 from that textbook, it's page 144 and it has some
8 equations in terms of biological diversity.

9 MADAM CHAIR: Doesn't anybody remember if
10 we have -- we have articles by Odem I think in exhibit
11 but I don't know about this page.

12 MR. FREIDIN: Not that page.

13 MADAM CHAIR: Okay.

14 DR. QUINNEY: It's a question of whether
15 it's the same edition. This is the third edition 1971.

16 MADAM CHAIR: Well, let's make an exhibit
17 out of it. That will be Exhibit 1738.

18 MR. HANNA: (handed)

19 MADAM CHAIR: Thank you, Mr. Hanna.

20 It's a one-page excerpt from the third
21 edition of a text entitled: Fundamentals of Ecology,
22 authored by Eugene P. Odem and the date is...?

23 MR. HANNA: 1971, Madam Chair.

24 MADAM CHAIR: 1971.

25 MR. HANNA: That perhaps dates me.

1 ---EXHIBIT NO. 1738: One-page excerpt from third
2 edition of text entitled:
3 Fundamentals of Ecology, authored
 by Eugene P. Odum dated 1971.

4 MR. HANNA: Q. Now, in your witness
5 statement under the rationale in terms of the between
6 stand diversity you make reference to the Shannon
7 Weaver H statistic; correct?

8 DR. SUFFLING: A. Shannon Weaver what?

9 Q. H statistic.

10 A. Age statistic?

11 Q. H.

12 MR. FREIDIN: H.

13 MR. HANNA: Q. Capital H.

14 DR. SUFFLING: A. H, yes. H, okay.

15 Q. And that is the same statistic that
16 is shown here on the second page of Exhibit 1738 under
17 C-3, Shannon's index of general diversity?

18 A. That's correct, but that index does
19 appear in various forms over various kinds of equations
20 that have the same logic behind them, but they do
21 different details as I'm sure you're aware.

22 Q. Okay. Now, I want to make to sure I
23 understand how the diversity index would be calculated.
24 And, first of all, is it fair to say there's more than
25 one diversity index, it's not -- there's various

1 proposals in terms of what a diversity index might be,
2 different versions?

3 A. You mean beyond the Shannon and
4 Weaver?

5 Q. Yes.

6 A. Yes, there are a number of others.

7 Q. Now, just sticking with the Shannon
8 and Weaver diversity index, the form is shown there and
9 it indicates that it's a function of the importance
10 value, it says here, for each species. I gather in
11 this case it would be for each stand?

12 A. No, it would be for each kind of
13 ecosystem. We're talking at a landscape level.

14 Q. Okay. And the importance value for
15 each ecosystem type would be measured by its area?

16 A. It could be measured by the area.
17 The practice which I have generally adopted is to use a
18 proportion of the area, so if --

19 Q. A proportion of the forest management
20 unit that falls within that class?

21 A. Whatever area you're looking at,
22 whether it was a management unit, an ecodistrict, an
23 ecoregion, whatever.

24 Q. Okay. Now, are you proposing that we
25 have one diversity index that applies for this

1 criterion?

2 A. I would imagine that in
3 administrative terms it would be desirable to stick to
4 one index. It might be that in the course of research
5 or discussion that people would pick more than one, but
6 I should think, all things being equal, one should
7 stick to one.

8 Q. Would you agree that diversity has a
9 number of components and a major component is what is
10 termed in technical terms the richness or variety
11 component?

12 A. You're talking of diversity as a
13 concept as opposed to a particular index.

14 Q. Yes.

15 A. Yes.

16 Q. And can you explain what the richness
17 or diversity component represents?

18 A. Okay. At its crudest level, within
19 the ecosystem richness could be represented by the
20 number of species present. When one is looking at the
21 landscape level, then at its crudest level richness
22 would be represented by the number of different kinds
23 of ecosystems which are present.

24 Q. Okay. And another important
25 component of diversity is what is called evenness or

1 equitability?

2 A. Yes, that's true.

3 Q. And can you explain what equitability
4 or evenness is in terms of diversity?

5 A. Okay. This is a more different
6 concept for people to grasp generally. The best way to
7 encapsulate it is with a very brief example. If I had
8 an ecosystem, let's just take, you know, a stand of
9 trees to start with, this is an easy concept to get
10 ahold of.

11 Suppose this ecosystem had just two
12 species in it and I had 99 of one of and one of the
13 other then, that would be a very uneven situation in
14 terms of evenness or equitability, it would be reckoned
15 to have a low diversity; conversely if you had a
16 hundred individuals as before of two species as before,
17 if you had 50 of each, that would be the most even or
18 the most diverse in this context in that situation.

19 Q. And in order to capture the evenness
20 component of diversity one would need another diversity
21 measure in addition to the Shannon index; correct?

22 A. The Shannon index is one of a couple,
23 it's in the minority, that attempts to combine the
24 richness and the evenness components in one measure.

25 Now, there were two reasons why we chose

1 to use this particular index: One was because of that
2 feature, because it enabled you to bring the whole
3 question of diversity down to one statistic; the other
4 reason for using that particular measure is that over
5 the years it has been the most widely accepted and
6 widely applied of all the measures that we use.

7 Q. If we could look on page 144 again at
8 the Table 6-1, Section 6-1, the section entitled
9 Evenness Index, you see the evenness index is a
10 function of the Shannon index?

11 A. Yes.

12 Q. And the reason that is calculated,
13 because the Shannon index does not represent evenness
14 as well as it represents richness, particularly in the
15 way that you've described stands; correct?

16 A. I'm sorry, I didn't follow that last
17 statement. That's not your fault, it's mine.

18 Q. In the way you've described
19 importance values for stands, which is the proportion
20 of the area they represent--

21 A. Okay.

22 Q. --you have essentially focused
23 primarily on the richness component and not on the
24 evenness component in terms of the geographical
25 distribution within the unit?

1 A. No, that's not true. The statistic
2 can be used in either way.

3 Q. All right. Then in terms of the
4 compliance with criterion No. 3, that 50 per cent
5 should be measured with respect to the Shannon index of
6 diversity as shown on page 144 with the definition of
7 importance as you've given it?

8 A. Yeah, more or less. We have to
9 fiddle with the equation, but we needn't get into that.

10 Q. That's fine. Now, would you agree
11 that between stand diversity will inevitably increase
12 as one moves from an ecosection level to the provincial
13 level of analysis?

14 A. Yes.

15 Q. Therefore, the acceptable range in
16 terms of the change in diversity will be much greater
17 at the provincial level than at the ecosection level.
18 And just as an example -- I'll ask that question. Stop
19 there.

20 A. An acceptable change will be greater
21 at, you say, at a regional than at a local level?

22 Q. Yes.

23 A. I can't answer that offhand, I would
24 have to get a calculator out and have a look at the
25 options.

1 Q. Let's look at a simple example.

2 A. It would take a little while.

3 Q. Let's look at a simple example. The
4 Shannon index increases with diversity; correct?

5 A. Yes.

6 Q. One being the lowest and going up
7 from there.

8 A. Mm-hmm.

9 Q. So if we have a high level diversity
10 the Shannon index may be, say, 10. If I take 50 per
11 cent --

12 A. That would be very high.

13 Q. I agree, but we're talking provincial
14 level with a large number of stands, high diversity;
15 are we not?

16 A. Mm-hmm.

17 Q. If we take 50 per cent variation
18 around that, that's plus or minus five units?

19 A. Right.

20 Q. If I take 50 per cent of two I have a
21 much narrower range of limits in terms of variation of
22 diversity?

23 A. You mean an index of 2?

24 Q. Yes.

25 A. Right.

1 Q. Now, does it not follow then that the
2 ecosection level will be much more binding in terms of
3 the constraints that you've put out here than the
4 higher levels in terms of this criteria?

5 A. I would say that the limit that you
6 are talking about there will be adequate at the local
7 level, given that the variation can be a lot more
8 extreme, or the allowable variation can be more extreme
9 at the provincial level, you're going from a rule which
10 is acceptable at the local level which is the strictest
11 to something more relaxed at the provincial level, so I
12 don't see that that would be a problem in management
13 terms.

14 Q. No, I just want to make sure that I'm
15 interpreting what you propose accurately.

16 A. Yes. And just to add an addendum to
17 that, it would also be more physically -- in practical
18 terms it would be more difficult to get as massive a
19 change at the provincial level, and so one wouldn't
20 necessarily have to be quite as careful as coming down
21 to districts.

22 Q. Can you provide in a practical
23 concrete what does it look like form of what this 50
24 per cent variation in stand diversity means? That map
25 behind you, 1732, I'm happy if you wish to refer to

1 that.

2 A. This one.

3 Q. What would a 50 per cent reduction in
4 diversity look like on that map?

5 A. I would guess, and this is only a
6 guess at this point, that it's going to be something
7 like the difference between this and this area in here.
8 Now, that is a first guess, I would have to confirm
9 that.

10 Q. And you haven't any material to bring
11 forward to us to say here's what it looks like?

12 MADAM CHAIR: Excuse me, Mr. Hanna.

13 What did you mean by that, Dr. Suffling?
14 We didn't understand when you were drawing the circle
15 saying this is what it means.

16 DR. SUFFLING: Oh, I'm sorry. I would
17 expect - and this is just a gut feeling, I haven't done
18 any calculations of this as you'll understand, Madam
19 Chair - but that this area here would have a diversity,
20 that if it changed to something like this, would be
21 reduced by about 50 per cent or 60 per cent.

22 Now, I have to qualify that answer
23 because I haven't made the calculations and that's just
24 based on experience over, you know, 10, 15 years.

25 MR. HANNA: Q. Now, have you evaluated

1 alternative limits or is this similar to all the others
2 we've talked about, this is a first cut and you
3 haven't evaluated all the alternatives in terms of
4 looking at what the implications might be?

5 DR. SUFFLING: A. Alternative
6 percentages you mean?

7 Q. Yes.

8 A. No, we have not.

9 Q. Now, can you indicate to me which FFT
10 term and condition is designed to incorporate this
11 recommendation?

12 A. I don't see it under 26(b). I can
13 read the whole booklet, if you like, but it would take
14 a while. I would have to go looking.

15 Q. Well, perhaps you could go looking
16 this evening or whatever and come back to the Board and
17 indicate to them if you find it.

18 A. Right.

19 Q. If it's not included, I take it you
20 would want it included?

21 A. I would want something included along
22 those lines. Do you concur with that?

23 DR. MIDDLETON: A. My view would be that
24 this is, again, an example of the sort of thing that,
25 keeping in mind the terms and conditions are starting

1 points which we expect to be elaborated, it would be
2 nice if it were there, but if it were not, it would be
3 an example of that class of things we expect to be
4 added as our knowledge base increases.

5 Q. Do you have any evidence to bring
6 forward to this Board to suggest that at the ecosection
7 level or at a higher level of ecological classification
8 that the landscape mosaic currently or in the
9 foreseeable future is likely to violate this
10 constraint?

11 DR. SUFFLING: A. I suspect that if you
12 went to some of the areas that presently have very,
13 very large contiguous clearcuts in landscapes that are
14 fairly uniform, perhaps a sand flat or something like
15 that, a large plain; in other words, where the clearcut
16 had not left a lot of islands of mature timber dotted
17 around the landscape, that if you compared air photos
18 of the pre-cut condition and post-cutting condition,
19 that it would fall in the order of 50 per cent or more
20 as cutting is practised right now and as it has been
21 practised in certain places.

22 Q. You haven't any specific examples
23 demonstrating that type of an effect?

24 A. I haven't calculated any, no.

25 Q. Now, when you use the term diversity

1 There might, however, be research
2 programs that would be monitoring how the system was
3 doing. Those research activities might indeed look at
4 these separate facets.

5 Q. You said, no. You meant, yes, that
6 one criterion would apply?

7 A. I mean that one criterion for
8 diversity would apply at a landscape level, and then if
9 there was - as there should be - if there was research
10 and monitoring programs going on they would look into
11 some of these other things.

12 Q. Dr. Middleton?

13 DR. MIDDLETON: A. That's precisely the
14 point I was going to make.

15 Q. All right. I would like to now move
16 to criterion No. 4, this deals with patch sizes. Now,
17 I take it a patch is synonymous with a stand; is that
18 correct?

19 DR. SUFFLING: A. Much of the time it's
20 synonymous but not invariably because sometimes a
21 disturbance, whether man made or through fire or
22 something, will run through more than one stand.

23 Q. I'm sorry, I don't understand that
24 answer. How will a disturbance that runs into multiple
25 stands change the definition of a patch?

1 A. It doesn't change the definition of a
2 patch, but you were trying to tell me -- or you were
3 suggesting or asking whether the patch was the same as
4 a stand, and what I'm saying is that a lot of the time
5 it is, but not invariably.

6 Q. Now, again in terms of the variation
7 permitted in terms of the most common patch size, the
8 factor of 2 was your best judgment, or is there some
9 other scientific basis on which you've developed that
10 estimate?

11 A. This one was a little firmer than the
12 other one and it relates back to an overhead that I put
13 up yesterday.

14 Q. That's in Exhibit 1729.

15 A. Well, unfortunately my copy is not
16 numbered because I only have the transparency. Do you
17 know what the number is?

18 Q. Those look like the tables on page
19 15, 16 and 17.

20 A. I can't vouch for the table number.
21 That's the right exhibit, yes.

22 Q. Yes.

23 A. Okay. So the rationale here was for
24 a maximum patch size of a hundred hectares, and you can
25 see here that we had various classes of natural

1 disturbance.

2 Q. That's page 17 you're looking at now.

3 A. I don't know the page number, I'm
4 afraid.

5 Q. I believe it is.

6 A. If we were to draw, we were to
7 superimpose on that - perhaps, to be honest, if I had
8 done this yesterday we wouldn't have got into this long
9 discussion that we had - if I were to put the number of
10 burns of a given size here, you would find, you know,
11 this kind of a relationship. I don't know the exact
12 shape of the curve, but it would be something like
13 that.

14 MADAM CHAIR: We have that evidence
15 before us, Dr. Suffling.

16 DR. SUFFLING: I'm sure you've seen it
17 before, Madam Chair.

18 So if we take the commonest patch size,
19 we wouldn't want this to vary too much in either
20 direction because to do so would have a number of
21 ecological ramifications.

22 So if -- let's, for the sake of argument,
23 say that's the commonest size there, we would put
24 limits on this that would be fairly, you know, fairly
25 relaxed, but they would not allow it to vary too much.

1 If it goes up too much in this direction,
2 up into this part of the graph, then what you'll end up
3 doing is having a lot of very large disturbances and
4 that is not the same pattern that nature has ordained,
5 it's very different.

6 So if we do that we run into two
7 problems: One is that you're changing the whole mix of
8 patch sizes in the first place, and the second problem
9 is that you've also got this problem that very large
10 fires are not being controlled as effectively as small
11 ones. So the idea is to stay down in these -- for the
12 most part, in fairly small patch sizes.

13 Now, that one that I've marked there
14 happens to be very small indeed and that would probably
15 be inappropriate, but that's just done in heat of the
16 moment.

17 MR. HANNA: Q. Fine. That explains why
18 patch size is important. My concern was the basis for
19 selecting a deviation of a factor of 2 rather than a
20 deviation of a factor of 3 or a deviation of a factor
21 of 1.5.

22 DR. SUFFLING: A. I think that if you
23 looked at individual regions you would find some
24 variation in the graph that I've just put up and there
25 would have to be some flexibility in interpretation,

1 that's on a regional level, and the 50 per cent that
2 I've given you, as with the others, is a starting point
3 but given the classes there, 50 per cent does not seem
4 to be out of line.

5 Q. And I take it, as with the other
6 criterion, you haven't taken a representative set of
7 landscapes and applied this criterion to see how that
8 might vary the mosaic?

9 A. I haven't done total research on it,
10 no.

11 Q. Now, in terms of criterion No. 5,
12 again you have a factor of 2, this is your best
13 estimate, you haven't tested this?

14 A. It's a starting estimate, yes.

15 Q. You haven't tested it in terms of
16 what the implications are in terms of the landscape,
17 how binding this constraint might be?

18 A. There are --

19 Q. What the implications might be?

20 A. There is a research, a body of
21 research literature on problems that are very similar
22 to this but, unfortunately, most of the research has
23 been done in agricultural landscapes and to extrapolate
24 into northern forested landscapes might be a mistake.

25 Q. So the practical consequences of that

1 If it goes up too much in this direction,
2 up into this part of the graph, then what you'll end up
3 doing is having a lot of very large disturbances and
4 that is not the same pattern that nature has ordained,
5 it's very different.

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7 problems: One is that you're changing the whole mix of
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16 what the implications are in terms of the landscape,
17 how binding this constraint might be?

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19 Q. What the implications might be?

20 A. There is a research, a body of
21 research literature on problems that are very similar
22 to this but, unfortunately, most of the research has
23 been done in agricultural landscapes and to extrapolate
24 into northern forested landscapes might be a mistake.

25 Q. So the practical consequences of that

1 constraint at this time are unknown?

2 A. The consequences of the principle are
3 known.

4 Q. No, I understand.

5 A. But the distances involved, again
6 this is - I presume the others will confirm - this is
7 first estimate, a first guess, a start.

8 Q. Okay. Now, in terms of criterion No.
9 6, you're proposing that the D statistic be the measure
10 for assessing compliance with this constraint?

11 A. That seemed to be a reasonable one,
12 it's the one that's often used in the literature.

13 Q. And again, the basis for the 50 per
14 cent is your best judgment and your answers in terms of
15 testing this in terms of the practical application of
16 landscape are unknown at this time?

17 A. In this case we have done a little
18 bit of very rough conceptual modeling and you find that
19 if the shape measured D increases by 50 per cent with a
20 circular patch, which is rather unnatural but it's a
21 starting point, then the maximum distance from the edge
22 of the patch falls by something more than 50 per cent.

23 So if you follow that logic through you
24 find that - it is an an increase or decrease in D - an
25 increase in D produces, at the level of 50 per cent,

1 produces quite a sharp decrease in the interior space
2 in the patch and that is the reasoning for limiting it
3 to 50 per cent.

4 Q. Do you expect that relationship to be
5 linear or --

6 A. No, it's not linear, it's negative
7 exponential.

8 Q. Right. So that as you get a more --
9 a higher D value, the impact in terms of interior
10 distance will be less?

11 A. Yeah. In one sense, yes, but I'd
12 have to expand on the answer, and I think we'd need to
13 draw something to perhaps help the Board a little bit
14 to see what would happen.

15 MADAM CHAIR: Maybe we'll take our break
16 now, Dr. Suffling, if that's good for you.

17 Back after the break, Mr. Hanna.

18 MR. HANNA: Certainly.

19 ---Recess at 2:45 p.m.

20 ---On resuming at 3:10 p.m.

21 MADAM CHAIR: Please be seated.

22 MR. LINDGREN: Madam Chair, before Mr.
23 Hanna begins, I would like to point out that I have
24 provided the parties and the Board with a hard copy of
25 the previous overhead used by Dr. Middleton and Dr.

1 Suffling, this is Exhibit 1737.

2 And Dr. Suffling is about to describe
3 another overhead, and we have already made hard copies
4 of that, and I have anticipated that the exhibit number
5 will be Exhibit 1739. I guess that was sheer deduction
6 on my part and --

7 MS. SEABORN: Deduction, but...

8 MADAM CHAIR: Could you describe Exhibit
9 1739, please?

10 DR. SUFFLING: Okay. Mr. Hanna had asked
11 about the effect of the D statistic or patch shape on
12 the D statistic, and the way that I've tried to
13 illustrate this is with four examples of different
14 shapes of patches.

15 Now, these are not to scale as drawn
16 here, but I've done a few calculations. I've taken
17 areas which are equal, so they were all of nine units,
18 and if you do this you find that if you have a circle -
19 and this is the basis of the D statistic - you get D
20 equals one.

21 The other extreme, if you take a very
22 elongated shape such as this one you'll get a D of 2.4
23 or more if you make it longer. So this is 12 units
24 long, .75 wide, and it still has an overall area of 9.

25 Now, Mr. Hanna had made the remark or

1 question about the implications of the D statistic
2 for -- I'm trying to get the drift of what your very
3 last point was, Mr. Hanna.

4 MR. HANNA: I'm sorry, Dr. Suffling. I
5 was concentrating on something else.

6 DR. SUFFLING: You've asked me - I'll
7 give you my council - but you had asked me about the
8 effect of the patch shape on something to do with
9 interiors or...

10 MR. MARTEL: We could just move on.

11 DR. SUFFLING: It was an important point.

12 MR. HANNA: I didn't want to talk about
13 it.

14 DR. SUFFLING: Anyway, as you elongate
15 the patch shape you find that the distance from the
16 centre to the edge goes down until this sort of
17 situation would represent, for instance, a hedge row
18 where you effectively have two forest edges
19 back-to-back with nothing inbetween, so there is no
20 interior.

21 And this one, besides for size, would
22 represent the shape with the most interior habitat, and
23 that is why the D statistic is employed and why it's
24 thought to be representative of something ecologically
25 meaningful.

1 MR. HANNA: Q. Dr. Suffling, I meant
2 that in no disrespect --

3 DR. SUFFLING: A. No, I understand.

4 Q. I was trying to remove questions that
5 I might otherwise be asking you, so it was to a good
6 end.

7 MR. HANNA: Madam Chair, you were asking
8 for a description of this. Is that a sufficient
9 description?

10 MADAM CHAIR: Well, I think Dr. Suffling
11 called it an overhead of the effect of patch shape on
12 the D statistic.

13 ---EXHIBIT NO. 1739: Overhead prepared by Dr. Suffling
14 depicting the effect of patch
shape on the D statistic.

15 MR. HANNA: Q. Now, in terms of the D
16 statistic and the point of reference, it indicates here
17 that it would be from an original state; the original
18 state being the existing state?

19 DR. SUFFLING: A. That was our sort of
20 working assumption, but that's subject to what would
21 happen in individual areas, how much you knew about the
22 area.

23 If we were dealing with boundary waters
24 of a canoe area of northern Minnesota where there's an
25 enormous amount of historical work that has been done,

1 the assumptions about what the natural state for
2 landscape would be might be a little different from the
3 Barren Drew watershed where I think there's one
4 preliminary pond -- P core and that's it. There's no
5 background, so you would have to take what you have in
6 a historical period as a starting point.

7 Q. But how would a P core help us
8 determine what the patch shape is?

9 A. I thought you were making a more
10 general point. I was not saying anything about patch.

11 Q. No, I'm talking about this specific
12 criteria.

13 A. Well, it probably wouldn't is the
14 answer.

15 Q. And is there any --

16 A. I wasn't making that connection.

17 Q. Is there any way to obtain a
18 historical patch shape estimate other than to have a
19 stand map, a historical stand map?

20 A. There is one possible method that's
21 been developed by a gentleman in the University of
22 Liverpool which involves measuring the magnetic
23 orientation of the particles in soils to map out the
24 previous extent of burns and comparing that with
25 different soils and it's a very long, very involved and

1 I'm sure it would never be practical on a wide scale,
2 but you asked me, so that's the answer.

3 Q. The 50 per cent limit in this
4 particular case is similar to the others, it's your
5 starting reference point and is something that would
6 have to be tested in terms of its practical
7 consequences?

8 A. Yes, that is true. The general
9 context of what we've been trying to show here is, of
10 course - just as you're trying to show - that for each
11 point there is a degree of arbitrariness in what we
12 have assigned.

13 So our general point in putting the
14 statistics together and in suggesting a starting point
15 is not necessarily that these particular parameters,
16 these particular limits would be adopted, but rather to
17 show that in the context of landscape management it is
18 possible, indeed it is already done, we can come up
19 with objective, quantifiable, usable statistics that
20 describe the landscape and they have an ecological and
21 management relevance.

22 That was the point of doing this, not to
23 say that 50 per cent or 45 per cent was the right
24 value.

25 Q. Now, can you indicate to me which FFT

1 term and condition reflects criterion 6?

2 A. I don't know whether I can offhand.
3 It's probably in 26.

4 Q. 25 or 26. Excuse me, 26, yes 26(b).

5 A. Possibly. It doesn't seem to be
6 there. I think we are in the same situation as with
7 that other point that you raised about another
8 statistic.

9 Q. Well, can you undertake the same
10 exercise with that and report back if it's there?

11 A. Right.

12 Q. If it's not there, you would want it
13 included?

14 A. I guess that is up to FFT.

15 Q. No, I'm not asking -- FFT will make
16 their decision, I want your decision.

17 A. Yes.

18 Q. Now, on page 66 of your witness
19 statement under Section C.5 Adjusting Timber Management
20 Accordingly - this is a minor point - but what did C.5
21 refer to? It didn't seem to be out of context.

22 A. There is a list earlier in the
23 statement of four or five stages that had to be gone
24 through predicting landscape change, choosing a desired
25 future state and so on, this is the last of those.

1 Q. I see. Okay. Now, you talk in this
2 section about the possibility of using optimization
3 models to implement the landscape management approach
4 you're proposing in Appendix 2; correct?

5 A. I'm sorry, you lost me on that.

6 Q. This section is talking about the
7 application of optimization models to implement the
8 landscape management approach you're referring to?

9 A. Right.

10 Q. I'd like to know what experience you
11 have in developing and applying optimization tools for
12 these types of decisions?

13 A. I have no practical experience, that
14 is why I didn't expand on the point.

15 Q. Would you agree, however, that this
16 is a classic multi-objective problem and that you would
17 be faced with, in this situation, setting objectives
18 for, for example, wood and the ecosystem elements that
19 you've described?

20 A. Yes.

21 Q. What procedure would you go through
22 to weight the ecosystem supply components that you've
23 referred to relative to wood supply?

24 A. There are obviously numerous systems
25 that can be applied. If one was doing this on a

1 numerical basis and if you apply weights to the
2 different factors involved such as timber supply,
3 production of furbearers, provision of recreational
4 opportunities, then one must recognize at the outset
5 that the answers that are obtained can be completely
6 different depending on the weights that are applied.

7 To use an analogy from an area where I do
8 have some considerable practical experience, when
9 Ontario Hydro is trying to plan the routing of power
10 lines, if you take some of their overlay maps,
11 different factors that might determine where the line
12 would go in the landscape, and you start fiddling with
13 the weightings that are applied to those different
14 factors, you can -- if you wanted to be cynical, you
15 could completely change the path of the suggested route
16 just by changing the weighing. Now, that's the first
17 point to be made.

18 How do you get the weightings? There are
19 three ways in which this can be done basically, and I
20 don't know whether I'm trespassing on the area of one
21 of the other panels that's coming up, but this is fact.
22 You can choose the weightings using some kind of
23 technical criteria, you might for instance want to get
24 in there and do some kind of detailed economic
25 comparison and come up with dollar figures, and that

1 will be one example of quite a technical approach.

2 The second approach is to have the people
3 who are elected by the populace decide on what the
4 weightings should be, so they've had authority
5 delegated to them and they can make a decision
6 according to advice.

7 The third method is to go out and ask the
8 public what they think or what they feel about the
9 problem. The difficulty that the Board will presumably
10 face in a situation like this is in defining who is or
11 who are the public for a particular area.

12 Say you have a management unit, is it
13 just the people who live within the management unit,
14 just the people in the neighbouring towns, is it the
15 native people, the loggers, whatever, does it include
16 people in southern Ontario. That's a very basic
17 fundamental, very difficult political question. I
18 don't think I can pursue that any further than that.

19 Q. Okay. It's fair to say, however, you
20 agree that it's a critical step in that type of
21 procedure?

22 A. If you were going to use some kind of
23 multi-objective modeling or equations or whatever and
24 you're going to put weights into the equation, whoever
25 is deciding to use that method better be very clear

1 that the weighting system is going to tangibly change
2 the result, is going to affect the result depending on
3 which weighing is adopted.

4 Q. Now, will you turn to page 53 of your
5 report, and I wanted to just briefly go through what
6 actually constitutes this ecosystem supply analysis
7 approach that you've devised.

8 Can you just briefly explain to me what
9 ecosystem supply analysis, in the way that you've used
10 the term, constitutes? Can you show me a practical
11 example, just a simple example of what that means?

12 Dr. Baskerville was here and he said
13 here's what I mean by habitat supply analysis and drew
14 some age-class distribution curves and drew some
15 species production curves and said, that's what I mean
16 by habitat supply analysis.

17 Have you got something comparable to that
18 that we could understand?

19 A. Yeah, if I can find it.

20 Q. Are you looking at your overheads,
21 Exhibit 1729?

22 A. I'm looking at the overheads from
23 yesterday, the Trappers and the Forest Industry Report.

24 Q. And that is on page 14 of that
25 exhibit?

1 A. I don't have the paper exhibit, so I
2 can't confirm that.

3 MR. LINDGREN: That's correct, Mr. Hanna.

4 DR. SUFFLING: So here's an example, I
5 hasten to add, from a few years ago which I might do a
6 little differently nowadays, but basically you have a
7 historical situation here, you follow it through with,
8 in this case, with no management, with just fire
9 management, and then with fire management and
10 harvesting. And these are just four different kinds of
11 lowland, that is peat soil forested ecosystems in
12 northwestern Ontario.

13 And so you can see, following the
14 modeling, how much of each type you're going to get at
15 the end of a certain time period, and the foresters who
16 are running more sophisticated models like OWOSFOP and
17 so on can do this in a different context, in the
18 context of wood supply and in fact their models
19 nowadays are very much more sophisticated than this.

20 MR. HANNA: Q. Now, I want to see what
21 the unique component of this is, if there is, and as I
22 understand each of the pie charts, that's the
23 proportion of the vegetation type, the four vegetation
24 types that are listed in the legend; is that correct?

25 A. It's the proportion of the lowland

1 part of the landscape, that is the peaty soils, the
2 organic soils, which is occupied by each of the four
3 component types. I was just talking about forested
4 peat lands here.

5 Q. And how is that different than what I
6 would get out of WOSFOP or FORMAN or some other type of
7 model that's conventionally used to make forecasts of
8 the proportion of an area in different stand types?

9 DR. SUFFLING: A. You would have to get
10 into the nuts and bolts of the model to see how they
11 differ, but I would suspect that it's not very
12 different conceptually.

13 Now, how can we use an analogy. OWOSFOP
14 is like a tractor with a harrow on the back, and this
15 is like a tractor with a grader blade on the back, you
16 have to fiddle with the system to put the right tool on
17 the end to get a slightly different result, okay.

18 Maybe they're two different brands of
19 tractor, I mean OWOSFOP is shinier in Europe.

20 Q. What this constitutes is a forecast
21 of the proportion of an area in different stand types?

22 A. Yes.

23 Q. And that is what you mean by
24 ecosystem supply analysis?

25 A. Basically, yes.

1 Q. Now, that's fine, you can go back to
2 your witness statement if you could, please.

3 MR. MARTEL: Could you repeat that, a
4 forecast...?

5 MR. HANNA: It's a forecast of a
6 proportion of an area in different stand types.

7 Q. Now, in terms of presenting --
8 perhaps I will take one step back. You would agree
9 that the output from your ecosystem supply analysis
10 should be reviewed by the public?

11 DR. SUFFLING: A. I should think that
12 most information produced by the government should be
13 capable of being reviewed by the public.

14 Q. And the information that you would
15 see coming out of this approach that would be presented
16 to the public would be the type of information that
17 you've shown on page 14 of Exhibit 1729?

18 A. That is the diagram I just put up.

19 Q. Yes?

20 A. A possibility. Whether or not one
21 used quite that format or the way I have presented
22 information would depend on the sector of the public
23 that it was aimed at.

24 If I were presenting that information to,
25 let's say, some native trappers from northwestern

1 Ontario, I would be rather leery about using a pie
2 diagram, they wouldn't be stupid, but they might never
3 have seen the concept.

4 Q. Now, in your oral evidence, I believe
5 it was on Tuesday, you indicated that ecosystem supply
6 analysis should replace habitat supply analysis; is
7 that what you said?

8 A. We were advocating - and I think the
9 others would concur with this - that the ecosystem
10 supply approach would be the primary approach or the
11 primary filter. That did not preclude managing
12 specific areas to supply habitat for individual species
13 or managing specific areas for other purposes
14 primarily.

15 Q. So, you're not suggesting that you're
16 proposed ecosystem supply analysis approach should
17 replace habitat supply analysis as proposed by my
18 client?

19 A. We're proposing that it would be the
20 primary, the workhorse approach to land management in
21 an ecological context.

22 Q. I'm sorry, I really want to know
23 whether you're agreeing or disagreeing.

24 A. Well, I'm telling you what I'm
25 telling you, that we are proposing that this approach

1 be the primary workhorse approach, that the other one
2 other one would be very useful, indeed indispensable in
3 certain areas, but it would not be the primary or main
4 approach.

5 DR. BENDELL: A. The idea would be that
6 ecosystem is a broader term than habitat. Is that the
7 gist of this?

8 DR. SUFFLING: A. Well it's more than
9 just semantics. I'm sure Mr. Hanna wouldn't be raising
10 the question if he thought it was just semantics.

11 Q. We've explored the two-strategy
12 level -- the two strategies that you're proposing to
13 deal with the different levels. You're suggesting that
14 the ecosystem supply analysis approach that you've
15 devised is applicable for the landscape management
16 level; is that what I'm hearing you say?

17 A. Yes.

18 Q. And that the habitat supply analysis
19 approach would be applicable at the next strategy level
20 that you've made reference to?

21 A. What do you mean by next strategy
22 level?

23 Q. I was trying to avoid putting the
24 words that would be offensive to you. The species
25 specific, the species specific level?

1 A. The species approach might be
2 applied, you know, on a real microlevel and I don't
3 know a bat cave or something like that, or it might be
4 applied for individual management purposes on a much
5 larger area if you had an area where there was a need
6 to provide hunting opportunities for moose hunters.
7 That is not fundamentally in conflict with the
8 ecosystem approach.

9 Q. So, is it fair to say then that you
10 do see a need for a habitat supply analysis approach
11 but it would need to be complemented with this
12 ecosystem analysis approach that you're propsoing?

13 A. No. I see a need for an ecosystem at
14 a landscape level approach complemented by some kind of
15 species specific approach which would vary depending on
16 the objectives.

17 Q. Now, in your oral evidence you
18 referred to Exhibit 1728 as an example of the ecosystem
19 analysis approach that you're advocating.

20 A. That's the article by--

21 Q. Jordan and Baskin.

22 A. --Jordan and Baskin.

23 MADAM CHAIR: Which number is that, Mr.
24 Hanna?

25 MR. HANNA: 1728.

1 MADAM CHAIR: Thank you.

2 MR. HANNA: Q. That was the purpose of
3 this article?

4 DR. SUFFLING: A. What was the purpose
5 of the article? I am sorry, I don't follow you.

6 Q. This was introduced as an example of
7 the ecosystem supply analysis approach that you're
8 advocating?

9 A. It was really introduced as an
10 example of the fact that GIS is now capable of being
11 integrated spatially with models of the OWOSFOP kind
12 and this one I understand uses a modified version of
13 FORMAN.

14 Q. So does this represent what you would
15 term ecosystem supply analysis, this tool?

16 A. What we have here represents the
17 spacial approach to wood supply. Now, that is not
18 quite the same as what we are advocating because it's
19 concerned with wood supply, it isn't to do inherently
20 with ecosystems, but the general approach followed, the
21 hardware the software and so on, are very conducive to
22 the adoption of a similar or analagous system that
23 would involve ecosystem analysis.

24 The output in the sense would be
25 ecosystems not wood. By output, I mean in a computer

1 sense, in the sense of the software.

2 Q. Have you any experience using FORMAN,
3 FORMAN WILD, GIS FORMAN?

4 A. No, sir, I have not.

5 Q. On page 58 you make reference to the
6 forest management decision support system.

7 A. Yes.

8 Q. I take it you are supportive of this
9 initiative?

10 A. I've read the large manual that's
11 commonly called the Plonski book and some of the
12 initiatives in there look quite exciting. As the book
13 points out, they need to be further refined and the
14 group that's working on this is going through that
15 process at the moment, but as they appear in that book
16 they look encouraging.

17 Q. So, this concept of integrating the
18 wood supply and habitat supply and ecosystem supply in
19 an overall decision support system is something that
20 you would endorse?

21 A. Yes. The Plonski book advocates
22 developing a series of software modules that would do
23 various tasks within the framework that they see, and
24 it's quite conceivable, quite practical that some of
25 the things that we have advocated could be added as

1 another module or a series of modules that would
2 integrate with those other things.

3 Q. Now, on the top of page 589, the
4 paragraph there, you make reference of the need to
5 predict landscape change using simulation models?

6 A. Yes.

7 Q. Now, there has been a suggestion that
8 our current level of forest succession is inadequate to
9 predict these types of changes?

10 A. Our current understanding of
11 succession?

12 Q. Yes. Now, will you agree that our
13 knowledge could and should be vastly improved over
14 current levels in terms of all elements of ecology
15 including forest succession?

16 A. Well, that is such a generalization
17 that I have to agree with it, yes. Indeed, you know, I
18 get paid for doing that kind of work, so it's a nice
19 idea.

20 Q. But would you agree also that our
21 current level of knowledge is not an adequate excuse
22 not to develop these tools immediately; in other words,
23 we don't wait until we've got all the knowledge and
24 then develop the tools?

25 A. No.

1 Q. We use the information we have at the
2 present time and improve that information
3 simultaneously with applying the tools?

4 A. I assume that the other members on
5 the panel will concur with me in saying that our basic
6 approach has been to run with what we have got and then
7 progressively update it and improve it, working hardest
8 on the biggest gap.

9 Q. If there's anyone on the panel that
10 disagrees with anything that another panelist says, I'm
11 open to your comment.

12 DR. MIDDLETON: A. You will hear from us
13 I'm sure. If I could just add one here, not in
14 disagreement, but it supports. The language from the
15 ESSA document again, Exhibit 1714, on page 33 where
16 it's discussing this issue of prediction of changes
17 makes the point nicely, it says:

18 "Very likely this process of development
19 of model will have to be iterative and we
20 recommend that a first model be
21 constructed immediately providing initial
22 landscape succession model and to guide
23 other parts of the program."

24 I think that's the tool we're talking
25 about.

1 DR. BENDELL: A. As you talk this way, I
2 run that through my mind as well and I would have a
3 provision that you mustn't trash things that cannot be
4 replaced. So I think it would be wrong, you know, to
5 have a completely free landscape to develop and work
6 over. If that meant for example, experimentally
7 removing old growth timber that in a sense would never
8 be replaced, you could then have someplace in the
9 scheme that's finally arrived at, so I'm agreeing with
10 you, but I don't think that the boundaries are
11 unlimited in how much we can monkey around.

12 Q. Dr. Middleton, I would like to look
13 at your section of the witness statement under rare and
14 threatened and endangered species, and that starts on
15 page 26.

16 And I would like to ask you if you have
17 any evidence at this time to demonstrate that, as a
18 result of timber management activities in the area of
19 the undertaking, that there are species that are
20 currently threatened in the boreal forest only?

21 DR. MIDDLETON: A. My main concern is
22 exactly my lack of evidence of what's happening one way
23 or the other, and that was the main point I was trying
24 to get here. Especially when dealing with rare,
25 vulnerable, threatened or endangered species our

1 ability to have the information to make good species by
2 species estimates of risk and so on is constrained more
3 than anywhere else and the driving factors; we're
4 trying to get at another way to look at this issue
5 instead of going through species by species
6 information.

7 Q. But my question was, and I'll ask the
8 same question in terms of rare species, can you give
9 me - not an exhaustive list - an example, one or two?

10 A. Off the top of my head, no, it's not
11 an area that I work with explicitly. I would -- if I
12 were to pursue this, I would go to the Atlas of Rare
13 Plants of Ontario, for example, and begin from there to
14 answer your question but, offhand, no.

15 DR. SUFFLING: A. I can give you some
16 examples.

17 DR. BENDELL: A. Well, these lists exist
18 and I'll bring you the list in for tomorrow if you
19 wish. The Kirtland warbler comes to mind immediately,
20 Kirtland's warbler.

21 Q. I'm well aware of Kirtland's warbler.
22 You're saying Kirtland's warbler is certainly -- it's
23 an endangered species?

24 A. It's rare.

25 Q. Are you suggesting that its situation

1 is a function of timber management?

2 A. Well, I don't suppose we exactly know
3 that, but conceivably where it's turned up in Petawawa
4 and the Ottawa Valley, the way those stands are managed
5 could have a result in the persistence or return or
6 reuse of the area by Kirtland's warbler.

7 Q. But has it, where Kirtland's warbler
8 has shown up, as typically managed jack pine stands
9 that are about 3 to 4 metres high, reasonably spaced?

10 A. That seems to be the habitat in
11 Michigan, in the Michigan barrens. But it's on our
12 list, I put that to you.

13 Q. No, but my question was very
14 specific. My question was: Do we have species, just
15 some examples of species that are currently rare or
16 threatened or vulnerable or endangered as a result of
17 timber management activities per se in the province?

18 A. We'll take that away and we will
19 bring it to you tomorrow.

20 DR. SUFFLING: A. I think I wouldn't
21 want to shoot from the hip on that, it's not my direct
22 field.

23 DR. BENDELL: A. I suppose the southern
24 form of the woodland caribou would again quickly come
25 to mind, and here we have a remnant population on the

1 shores of Lake Superior.

2 This is a species that once occurred as
3 far south as Barrie and I think in that case a pretty
4 good argument can be made, the reduction of the
5 southern boreal forest has led to the demise of that
6 species, vast reduction in numbers.

7 Q. As opposed to human presence?

8 A. Well, of course, this becomes a
9 problem of clearly separating out all the forces that
10 are involved, because when forest is removed human
11 presence is going to occur as well, so no doubt they've
12 been shot.

13 But coming back to the idea that habitat
14 is often the main -- and habitat supply is the main
15 circumstance of what species obtains in an area, I
16 think woodland caribou -- southern woodland caribou
17 would be a good example.

18 DR. SUFFLING: A. If I can expand on
19 that slightly. There is work I believe in Pukaskwa
20 National Park, also in other areas of woodland caribou
21 habitat, possibly by Burger - and I'm not quite sure of
22 the author - and it shows that the numbers of caribou
23 tend to be less where roads have been driven through
24 the forest.

25 Now, there's a correlation there, okay.

1 Now, knowing whether that's a cause and effect is very
2 difficult. The hypothesis is in this case not that
3 hunters were involved, although that's a possibility,
4 hunters of a different kind, rather that the wolves and
5 the caribou tend to travel along roads because they're
6 relatively clear of snow, and the access allows the
7 wolves to get into the caribou wintering area with a
8 relatively small loss of metabolic energy and,
9 therefore, to be more ambitious predators, and they do
10 a job on the caribou. That is the way the thinking
11 goes.

12 Now, this is an example of what happens
13 generally. You've got a correlation between two
14 factors and a difficulty in proving causality, because
15 obviously there are many things that could be involved,
16 and the wildlife biologist involved in this have a
17 strong notion or feeling of what's going on, but when
18 you ask us to give you chapter and verse and say, yes,
19 this is the cause of this, then the scientist in us
20 begins to get a little bit - you must know this being a
21 biologist yourself - begin to get very, very cautious
22 about making blanket or dogmatic statements.

23 Q. If there are any other examples, I
24 would be happy to hear from any members of the panel
25 that you feel are pressing issues in terms of species

1 that are currently threatened as a result of timber
2 management activities in the province.

3 Now, Dr. Middleton, on page 28 you make
4 two recommendations with respect to the rare,
5 threatened and endangered species, and the first is a
6 broader definition than the current one and you say,
7 for example, by using the Atlas of Rare Vascular Plants
8 of Ontario for plants.

9 Now, I was interested in knowing what you
10 mean by using the atlas.

11 DR. MIDDLETON: A. Taking into account
12 the best information that we do have in an area where
13 it's notoriously difficult to get information. Because
14 of the nature of rare, threatened and endangered, these
15 species, it's typically more difficult to get
16 information about them, therefore, we should use
17 whatever we have available.

18 Q. Okay. What barrier is there in the
19 current timber management planning process to prevent a
20 concerned citizen such as yourself from using the atlas
21 as the basis for declaring a local area as being
22 significant and requiring special treatment?

23 A. As I understand it that I think is a
24 way that's open. If, for example, I was particularly
25 interested in species "x" that was endangered soil

1 earth worm and I knew about it in a particular place
2 and I knew there was a planning for a timber thing
3 coming up, I suppose it's open to me to go and bring
4 that up and have it instituted as an area of concern.

5 My concern from the broader perspective
6 that we're using here is that I would not like to think
7 that we have to on a species by species basis hope that
8 there's somebody out there that's particularly
9 interested in this species of soil organism or fungus
10 or whatever. I think in most cases remembering that
11 we're talking about all ornate organisms, the vast
12 majority of cases we won't have that information
13 available for anybody.

14 Q. No, but let's just deal with -- we
15 haven't got an Atlas of Rare Springtails; do we?

16 A. Unfortunately not, no.

17 Q. So let's just deal with the Atlas of
18 Rare Vascular Plants. What do you want to see done in
19 terms of using the atlas in your terms, in terms of the
20 current timber management planning process?

21 A. My concern was taken from earlier
22 parts of the transcripts where it was said that rarely
23 if ever are plants or invertebrates the basis for areas
24 of concern for making changes to timber management
25 activities. I have the references from the transcripts

1 in there. This is the information I'm working from,
2 it's not my own direct information, seeing how timber
3 plans are put into place in the field.

4 If that is, in fact, the case, then I
5 would suggest when we have a geographically based
6 database like the Atlas of Rare Plants that that
7 information be used in a more systemic way. It
8 identifies, for example, with dots on a map areas where
9 these are known to be found, and if there were a
10 mechanism for making -- having a flagging of those, for
11 example, as a layer in a GIS system when dealing with
12 ecosystem planning, that that would be both technically
13 possible and advance on where we stand now.

14 DR. SUFFLING: A. It's possibly worth
15 adding to that answer that the vast majority of the
16 rare plants in the atlas are found in extremely local
17 distributions, so you're not looking from a timber
18 management point of view in most cases at sterilizing
19 vast areas of country side.

20 There are cases in northwestern Ontario,
21 for instance, a rare plant called heuclera where the
22 only station I know is at the top of one small hill and
23 it would be so easily protected. It isn't, but it
24 could be.

25 Q. And all you're suggesting is that the

1 geographic information contained in the atlas, when a
2 GIS system comes into play, that that be part of one of
3 the layers in the GIS and that that be flagged; that's
4 the essence of what you're propsoing?

5 DR. MIDDLETON: A. And I would certainly
6 like to see that and even before that point using it in
7 the best way we have available, taking that information
8 into account.

9 Q. Now, can we look at page 32, the
10 third paragraph, and you speak here about species that
11 are of great interest to my client and that is moose,
12 and you're referring about the moose habitat guidelines
13 and you say that:

14 "OMNR must relinquish the claim that
15 enhancement of moose habitat will achieve
16 the objective of biodiversity."

17 DR. MIDDLETON: A. Yes, I see that.

18 Q. Now, would you accept the following
19 change, inserting the word alone; in other words:

20 "OMNR must relinquish the claim that
21 enhancement of moose habitat alone will
22 achieve the objective of biodiversity."

23 A. Yes, I would be happy with that. I
24 think that would fit nicely with our two-level strategy
25 and, in fact, that's what we've done, is put that the

1 current species including moose would be in that second
2 layer of the strategy.

3 Q. Now, on page 33 at the bottom of the
4 page under 6.2 you indicate that:

5 "Some species may be managed on a
6 scientific basis to increase their
7 abundance and an example of that would be
8 moose."

9 A. Yes.

10 Q. Okay. Now, in terms of -- you
11 continue on and say that that should not occur in such
12 a way that it would jeopardize the health of other
13 species?

14 A. Correct.

15 Q. Now, in terms of jeopardizing the
16 health of other species, do you mean here that
17 management should not lead to a population declining
18 below a minimum viable population level, is that the
19 type of thing you're concerned about?

20 A. In theory, yes; in practice what this
21 would mean would be that the management prescriptions
22 for a species like moose, for example, would not be at
23 the expense of some of the criteria that we have put
24 forward for the landscape scale.

25 Q. Now, on page 34 at the bottom of the

1 page you make reference to the need to monitor species
2 and you're suggesting that monitoring more than 20 or
3 so would be administratively impossible.

4 A. Again, this was -- this idea was
5 taken from my reading of transcripts of earlier stages
6 here. I'm open to be convinced to the contrary, if
7 that is too small a number.

8 Q. I want to understand what your --
9 what the significance of this statement is. Are you
10 suggesting that the Ministry should routinely monitor
11 approximately 20 species of wildlife intensively on a
12 routine basis?

13 A. As I said earlier, when I was trying
14 to put together the overall thrust of it, any piece of
15 information that we have is to the good. I will never
16 ever be unhappy about having detailed species specific
17 information of any kind. If it's possible to get that
18 kind of information for 20 species or 200 species, I
19 would be delighted.

20 My concern is only when it gets to a
21 matter of priorities. My understanding, the reason for
22 putting this number in is to express the idea that it
23 is not remotely feasible that we can get this kind of
24 information for all wildlife of Ontario, keeping in
25 mind what our definition is and, thus, in the realities

1 of the world where budgets are always limiting, where
2 we have a task could eat up many fold, many times over
3 any conceivable budget, we can't let this task however
4 valuable in itself, drive the whole system.

5 That is why we keep coming back to saying
6 we want to have something done at the landscape level
7 and in the context of that, whatever we can get for
8 individual species is all to the good, only in that
9 context.

10 Q. So you aren't coming forward with a
11 specific proposal saying we should monitor 2 or we
12 should monitor 30 or we should monitor 10, you would
13 really defer that to someone who has more experience in
14 terms of the administrative constraints, budgetary
15 constraints and the technical constraints?

16 A. My druthers here would be to say that
17 we will monitor as many as we can, given the realities
18 of constraints after we've got the landscape
19 monitoring taken care of.

20 DR. BENDELL: A. And I would add to that
21 the ones that we feel are valuable or important to
22 monitor in the sense that they give us good ecosystem
23 information or species specific information if you want
24 to designate some species as featured species.

25 MADAM CHAIR: It's five to four, Mr.

1 Hanna, how are you doing with your cross-examination?

2 MR. HANNA: Going through it rapidly,

3 Madam Chair, trying to see if I can complete it in five
4 minutes.

5 MR. MARTEL: Don't let the clock stop
6 you.

7 MR. HANNA: I hadn't expected you would,
8 Mr. Martel.

9 MR. HANNA: Madam Chair, I think perhaps
10 the wisest thing is I will this evening go through
11 this, and I don't expect I'll be more than an hour or
12 two at the most tomorrow morning. I think it's
13 probably wisest for me. I still have a number of
14 notes. I may be able to remove a lot of them, and if
15 I'm successful I will be even shorter than that.

16 MADAM CHAIR: Okay, good, Mr. Hanna.
17 Mr. Cassidy?

18 MR. CASSIDY: Yes.

19 MADAM CHAIR: You are to follow Mr.
20 Hanna?

21 MS. BLASTORAH: I wasn't listening
22 either.

23 MR. CASSIDY: I was hanging on every
24 word.

25 MADAM CHAIR: Did you have something to

1 add to the Springtail discussion?

2 MR. CASSIDY: I know what they are thanks
3 to my colleague beside me.

4 MADAM CHAIR: How long will you be in
5 cross-examination?

6 MR. CASSIDY: Subject to questions from
7 the Board and things over which I have no control, an
8 hour.

9 MADAM CHAIR: Okay. Ms. Seaborn?

10 MS. SEABORN: Half an hour, Madam Chair.

11 MADAM CHAIR: Ms. Blastorah?

12 MS. BLASTORAH: I'm just trying to total
13 up how long in my mind that will be. That would take
14 us, I expect, close to the lunch break depending on Mr.
15 Hanna.

16 MADAM CHAIR: Oh, yes, I think so.

17 MS. BLASTORAH: Possibly with the morning
18 break, we potentially could finish tomorrow. I will
19 make every effort. Mr. Hanna has covered some of the
20 areas that I plan to cover, and that has reduced my
21 estimate.

22 All I can say at this point I will make
23 every effort to finish tomorrow and I will, like Mr.
24 Hanna, go through my notes tonight and try to eliminate
25 things that have been covered in sufficient detail.

1 MADAM CHAIR: All right, thank you.

2 Mr. Lindgren, we might be finished tomorrow. Your
3 re-examination will be brief?

4 MR. LINDGREN: As always, Madam Chair.

5 MADAM CHAIR: Thank you, Mr. Lindgren.

6 All right. Oh, tomorrow --

7 MS. BLASTORAH: We start late tomorrow.

8 MADAM CHAIR: Mr. Pascoe, do we start
9 later tomorrow, 9:30?

10 MR. PASCOE: 9:30.

11 MADAM CHAIR: This room is being used for
12 something else, so we have to start at 9:30 tomorrow.
13 The Board will consider sitting -- if we can finish
14 tomorrow, then we would sit later to do that.

15 MR. LINDGREN: Thank you, Madam Chair.

16 MADAM CHAIR: Thank you.

17 ---Whereupon the hearing was adjourned at 4:00 p.m., to
18 be reconvened on Thursday, February 21st, 1991,
commencing at 9:30 a.m.

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